MARINE RECORD

ESTABLISHED 1878.

VOL. XXIII, No. 9. CLEVELAND---MARCH 1, 1900---CHICAGO. $2.00 Per Year. 5c. Single Copy

LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and improve the character of the service rendered to the public.

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CANADIAN OUTLETS TO THE COAST.

Canada's progress in transportation facilities has been undergoing lively debate in the Parliament at Ottawa during the last few days. A member from the Georgian Bay district introduced a resolution which objects to developing the St. Lawrence canal route at the expense of the railway routes established via the Georgian Bay.

Early in the debate a member from the Lake Ontario district opposed the outlay of money at Port Colborne, saying that if Montreal had harbor facilities the grain could be transhipped at Buffalo and sent to Montreal as easily as to New York.

Mr. McMullen said that the Georgian Bay route is becoming the most principal outlet for Western produce, and the interests of that district should be carefully considered. He admitted the efficiency of the railroads for carrying the grain, but contended that the railways ever endeavor to maintain as high freight rates as possible, while boats hold rates down.

Mr. Haggarty, Ex-Minister of Public Works, said the scheme which he most approved of is the Ottawa and Georgian Bay ship canal, via French and Ottawa rivers. He declared this canal would give a system of navigation superior to any other from the Great Lakes to the seaports. He said there need be no fear that Canadian interests would be injured by the outflow of water from the lake into the Chicago drainage canal, which would be recognized in international as in common law. He held that the outflow of all the lakes ought to be regulated by the erection of obstructions at the mouth of each lake to secure the economic operation of the canal system. He assured the present Minister of Public Works of his support in any proposal to improve the facilities at Montreal harbor. With respect to Port Colborne, he was not of the same opinion.

Mr. Poupore of Pontiac approved of the improvements in Montreal harbor, but did not approve of the Port Colborne works. He spoke for some time upon the Ottawa and Georgian Bay ship canal, which, he said, was a waterway given us by Divine Providence. He appealed for support for it on national grounds.

THE Davies Dry Dock Co., Kingston, Ont., have the contract to build a steamboat, 70 feet long, for a Rat Portage firm. She will be completed in time for the opening of navigation.

AMERICAN PIG IRON PRODUCTION.

Mr. Swank, general manager of the American Iron and Steel Association, publishes in the Bulletin complete statistics of the production of all kinds of pig iron in the United States in 1899; also complete statistics of the stocks of pig iron which were on hand and for sale on December 31, 1899. Twenty-one states made pig iron in 1899 against nineteen in 1897 and 1898. The total production in 1899 was 13,620,703 gross tons, against 11,773,934 tons in 1898, an increase of 1,846,769 tons, or nearly sixteen per cent.

The following table gives the total production of pig iron in the United States in the last twenty-one years:

Years.	Gross Tons	Years.	Gross Tons.
1879	2,741,853	1890	9,202,703
1880	3,835,191	1891	8,279,870
1881	4,144,254	1892	9,157,000
1882	4,623,323	1893	7,124,502
1883	4,595,510	1894	6,657,388
1884	4,097,868	1895	9,446,308
1885	4,044,526	1896	8,623,127
1886	5,683,329	1897	9,652,680
1887	6,417,148	1898	11,773,934
1888	6,489,738	1899	13,620,703
1889	7,603,642		

The production in the second half of 1899 was more than a million tons greater than in the first half.

PRICE OF STEEL ARMOR.

The present indications are that the House Committee on Naval Affairs will include in the Naval Appropriation bill, which it will shortly report to the House, a provision authorizing the purchase of the best quality of armor at a cost of not more than $545 a ton. In response to requests for information as to the price paid for armor by foreign nations, Admiral O'Neil stated that the Japanese paid French armor makers more than $700 a ton for the armor for the cruiser Adzuma, and that the price a ton abroad was $600 and above.

BIDS FOR A LIGHT-HOUSE TENDER.

The bids for the steel, steam light-house tender Heather were opened on Feb. 20 in the office of the Naval Superintendent of the Light-House Board. The tender is to be delivered at the buoy depot of Astoria, Ore., within twelve calendar months after the signing of contract by the Secretary of the Treasury. The bids were as follows: Townsend & Downey Shipbuilding and Repair Co., Produce Exchange, New York city, $112,500; Moran Bros., Seattle, Wash., $109,872; Wolf & Zwicker Iron Works, Portland, Ore., $139,000.

THE first meeting of the Grand Council of the National Association of Marine Engineers of Canada took place recently at the Albion Hotel. The object of the association, which is intended to include all the marine engineers from the Atlantic to the Pacific, is to promote the interests of the engineers, to advance the standards, and see that none but those duly qualified according to law be employed in that capacity. Its intention is thus to protect passengers and the property of the steamship companies from all risks. Several questions of interest to the calling were discussed, and the following officers were appointed: Grand president, D. L. Foley, Toronto; grand vice-president, Wm. I. Barton, St. John, N. B.; grand secretary-treasurer, S. A. Mills, chief engineer Toronto Ferry Co., Toronto; grand conductor, Jas. A. McCarthy, Montreal; grand auditors, J. Fred. Williamson and G. T. G. Blewett, St. John, N. B. The constitution which will govern the society was adopted, and the meeting went on to discuss the by-laws. The next annual meeting will be held at St. John, N. B., in January, 1901.

POPULAR NOTES ON THE HEAVENS FOR MARCH.

(Communicated.)

March is not generally supposed to be an ideal month for observing the heavens, as clouds and storms are wont to prevail at that time. When one is shut in it may be helpful to remember that beyond the clouds the stars are always shining and when the clouds and storms have passed the stars are all the brighter because the storm has clarified the atmosphere.

The brilliant constellations that have been especially conspicuous in the evening skies of February will lose but little of their beauty during March, but from that time on they will gradually fade, when seen through a greater depth of atmosphere as they slowly sink toward the western horizon.

Leo, whose distinguishing features are the sickle and right angled triangle, will increase in beauty during the month as he approaches the meridian in the early evening. Certainly any one at all interested in the stars will be glad to welcome the return of the beautiful Arcturus in Bootes, to our evening sky once more. At present it does not become conspicuous in the north-eastern heavens till after nine o'clock, but before the close of the month it may be seen in the earlier evening hours.

Ursa Major is still climbing the northern heavens and the great dipper is especially conspicuous. Closely following the Great Bear is the lone star Cor Caroli of the Hunting Dogs, a beautiful double when seen through a telescope.

The Great Nebula in Orion is still a beautiful object in the field of a telescope on a dark, clear night. Under like conditions the star cluster in Perseus is surpassingly beautiful.

Mercury will reach his greatest eastern elongation from the sun, 18 degrees and 16 minutes, March 8th, and may be seen for a few evenings before and after that date if the atmospheric conditions are favorable.

Venus is the queen of beauty in our evening sky and rules without a rival. She is still approaching the earth and at the close of the month will be in round numbers sixteen millions of miles nearer to us than at the beginning and will then be much brighter than at present, though she can now be seen in full daylight if one knows just where to look for her. She is now in her gibbous phase and not especially interesting when seen through a telescope.

Mars will be invisible during March as his time of rising is almost coincident with that of the sun. Jupiter is still in Scorpio and will rise before midnight near the close of the month and once more be classed as evening star. He is near the meridian at dawn and is the brightest star in the morning heavens.

Saturn is in Sagittarius, the only first magnitude star in the south-eastern heavens in the morning. Still the daylight is driving back the darkness, and on March 20th, the twenty-four hours will be about equally divided between the contending forces. At no time is the equality exact. From that date the sun will be north of the celestial equator and there will be more daylight than darkness in the coming months.

The 20th also marks the beginning of spring. In the early days of February a group of spots came into view by the Sun's rotation, but at their first appearance it was evident that they were on the decline. For several days they continued to fade and when about midway in the transit they disappeared entirely. Since that time no spots have been observed upon the sun by the writer.

Toledo, Ohio D. SATTERTHWAITE.

ON Feb. 20, the U. S. first-class battleship Kearsarge was placed in commission, with Captain W. M. Folger in command. This vessel is the first of the new class with superposed turrets.

AROUND THE LAKES

BUFFALO.

Special Correspondence to The Marine Record.

The labor trouble at the Union Dry Dock seems to be no nearer a settlement than it was last week. The men met on Tuesday and decided to hold out for the advance in wages they demand.

Buffalo is going to be considerable of an ore receiving point next season. The Minnesota ore dock handled about three-quarters of a million tons last year and will double their facilities for the coming season, having leased the 1,200 feet river frontage of the Buffalo Dock Co. The Minnesota Co. will also do a large fueling business.

Nothing has so far been made public by the underwriters about hull or cargo insurance rates. The opinion, however, is that the hull rates will be about the same as last year. Some of the vesselmen claim that the rates are too high, but the agents of underwriters seem disposed to maintain them even to the point of a slight advance again this season.

The Tonawanda tugmen have organized branch No. 7 of the Licensed Tugmen's Protective Association and elected the following officers: President, James Buxton; vice-president, Fred Kibler; treasurer, Frank Hartman; recording secretary, A. C. Gillie; financial secretary, George Bacon; corresponding secretary, Edward Staley; tyler, Charles Bacon. The branch now has a membership of thirty-five pilots and engineers.

The Buffalo Dry Dock Co. is doing a large amount of work. The Western liner Montana is out of the dock, following the Vanderbilt of the same line, both of them having received large repairs. The steamer C. F. Curtis has also been given steel arches, keelsons and planking. The steamer D. C. Whitney has received a rebuild to the extent of about $6,000, and the Majestic is having her upper deck raised up flush with her rail.

Mr. P. G. Cook, secretary of the Western Elevating Association, said in conversation recently: "Buffalo is doing her share, and more than her share, in holding the grain forwarding trade for the Buffalo-New York route, but at the same time Buffalo cannot control the continent. If New York city wants the grain trade she must help Buffalo to put a large fleet on the lakes for that purpose, or else buy a controlling interest in all the railroads now carrying the western produce to the Atlantic seaboard."

From the middle part of last season up to the present, fully 200 vessels have changed hands and some of them the largest and best class of steel steamers. Several parties have been here this week looking at vessels laid up with a view to purchase, and Cleveland parties closed on the J. H. Schrigley at a cost, it is reported, of over $30,000, and they will lay out about $5,000 more on her as she is to be given new decks, etc., besides calking all over, as soon as a consort is bought they will be put in the lumber trade for their owners.

The Great Lakes Towing Co. will operate all the tugs of Tonawanda this season. The five tugs at that port are small boats and the price was about $30,000. With the exception of Toledo and Milwaukee the Great Lakes Towing Co. now has tugs at all the leading ports, and will later on increase the service. The independent or opposition line at this port intend giving the syndicate tug boats a good whirl in the competition for patronage this season. The probable result of this will be better service and at lower rates than tugging has ever been done here before.

There are five branches of the Hydrographic Office, U.S.N., on the lakes, preparing charts, etc. Opposition has developed in Congress to appropriating the full amount requested by the Hydrographic Office for carrying on the work this year, and marine insurance men and others interested are anxious to overcome the opposition, On Monday members of the Buffalo Merchants' Exchange met and passed a resolution instructing Secretary Keep to wire Buffalo's representatives a request to support the estimates sent in by the Hydrographic Office. Similar action I learn has been taken at other ports.

Coal shipments will open up brisk and early. The coal tonnage last year of the Pittsburg district was 16,000,000 tons. This year it will be increased to 20,000,000 tons, 7,000,000 of which will go via the lakes. The coal "combine," it is said, have three-year contracts for almost its entire tonnage at prices which will enable the operators to pay wages that will prevent strikes by the miners. Cargoes have already been shipped so as to relieve the railroad cars, and as tonnage can be secured more of it will be put aboard. The middle of April is now talked of as the opening of navigation, while last season it was early in May, and about half a million tons that was intended to be waterborne had to reach its destination by rail.

A good authority and one connected with lake interests says: "If the Corliss dam bill were passed, any scheme to use the waters of the Great Lakes for power purposes would be excusable, for promotors would declare that the dam would regulate the levels of the lakes and navigable rivers contiguous, and that therefore no harm would be done to navigation. I can imagine that the men behind the Chicago drainage canal would be very well pleased if the Corliss dam would be constructed, for they could then push the extension of their canal to the southern seaboard as rapidly as they wish to. Yes, the Corliss dam scheme may really be the offspring of the Chicago drainage canal project as well as that of the "Soo" power canal."

Mr. E. T. Evans, superintendent of the Erie and Western Transportation Co., better known as the Anchor Line, confirms the rumor that the Pennsylvania Railroad Co. has purchased the stock of the Anchor Line and now owns it. He said that the purchase would make no difference with the business of the Anchor Line, and that there would be no change in the organization of the office. Statements that the Pennsylvania Co. has heretofore been a shareholder in the Anchor Line are untrue. The Anchor Line was organized about thirty years ago, shortly after the completion of the Philadelphia & Erie railroad to Erie, Pa. This road is the property of the Pennsylvania Railroad Co. All of its lake freights have been handled by the Anchor Line and have been transfered at Erie.

Said one of the best informed members of the River and Harbor Committee, at the hearing last week on the Corliss bill, and lake level question: "Don't use my name in connection with the statement, but I do not hesitate to say that the people need have no particular fear that the Niagara dam will be authorized by the present Congress, nor for a long time to come. If it is ever built it will be some years in the future. And yet I believe such a dam as is now proposed, will be built at some future time. I am not yet familiar enough with the situation to say whether or not I think it should ever be built, but I cannot escape the belief that the boy is now living who will see the dam built and in operation." Of course the boy is living, and a good chunky size of a boy at that. Give us a few more drainage and ship canals, and not only will a dam be necessary at Niagara, to keep the water backed up in Lake Erie, but the Straits of Mackinac will need to be spanned and lock gates placed in the St. Clair and Detroit rivers, possibly, also in St. Mary's river so as to keep the natural supply from flowing through the projected Hurontario ship canal in its course from Georgian Bay to Lake Ontario.

DETROIT.

Special Correspondence to The Marine Record.

This has been quite a hard week for the ferries and railroad car transfers crossing the river. It took the C. P. R. transfer nine hours to cross to Windsor on one of her trips through being stopped with the ice.

The police board mention in their supplementary estimates, a police patrol tug to cost $8,000. The boat as proposed is to be a speedy steam craft of 5½ feet draught, about 75 feet in length and modeled after New York harbor patrol boats. The plan is to have the boat fitted with a powerful searchlight and other modern appliances. It is the desire of the board to have a boat which will be adequate to protect the entire river front from thieves and to rescue persons in danger of drowning, and pull big steamers out of the way of dock fires, etc. Those having property along the river front and marine men, are very much in favor of the police patrol boat as endorsed by the board of police.

The grain shoveling problem is as far from solution as ever. A member of the Lake Carriers' Association says that the elevators will find their mistake if they go to insisting on the rate of $1.35 for the shovels, which was made to the annual meeting at Detroit. The committee does not propose to accept it, when the rate last season was only $1.20. Why should any more be paid now? No meeting appears to be set by the committee and there will be no need of one until an acceptable rate can be got from the elevators. Meanwhile, the plan of letting the work seems to be as far from settlement as ever, although individual members of the grain shoveling committee are no doubt working to some end in preparing for a regular meeting.

The tug Maggie Ashton was wrecked on Burnt Cabin Reef in Lake Huron, October 6 last. Her owners, Henry Wineman, Jr., John O. Teagan and William T. Teagan, claim that what remains of her is worth only $50. Levi Brown has begun suit in the Justices' Courts against the owners, claiming $300 for wrecking services alleged to have been rendered. This week the owners petitioned the United States District Court for an order limiting their liability to the present value of the craft. Judge Swan made an order for the sale of the craft and appointed Luther S. Trowbridge, Jr., trustee. The question will be fought out on the petition to limit the liability. The procedure, under such circumstances, is said to be an unusual one. Wisner & Harvey are proctors for the petitioners.

Capt. Reid says that he has several wrecking operations on hand for the coming season, the most important of which are the Cayuga and Minch. The Minch is an old wooden schooner ashore near Ashtabula. She has already been placed on jacks and, barring accidents, she will be raised early in the season. The Cayuga will be raised for a certainty some time during the coming season. The wrecking operations on her have been the most celebrated in the history of marine disasters on the lakes. Leading wreckers have heretofore thought it impossible, but from present indications she will be afloat and in dry dock before the next season of navigation is over. The Weather Bureau here has been particularly exact in its predictions recently, and the recent cold snap was well heralded. On the whole, the weather maker here is more careful of us than at some of the other lake ports.

DULUTH—SUPERIOR.

Special Correspondence to The Marine Record.

Last year the first boat to arrive here was the Waldo, on May 2nd, although she had been in sight at the harbor 48 hours previously. This year everyone is figuring on an earlier opening, and there is every reason from present indications to think it will be much earlier.

It is reported that the ice is about six inches in thickness and very firm off Two Harbors extending along up towards the entrance here. Although the thickness of ice does not appear formidable, it is said that it will take considerable warm spring weather to honeycomb the light ice sufficiently for safe navigation.

Lumber shippers are beginning to be somewhat anxious over the shipping outlook for next season. It is said, however, that no charters have been made as yet unless they have been made on the quiet. Some dealers say that they expect the first charters to be made at the rate of $3 per thousand. On the other hand, it is known that vessels are asking $3.50 per M. feet.

The headquarters of the Superior Ship Building Company, the head of the lakes shipyards of the American Ship Building Company, will now be in Duluth. The operating offices of the shipbuilding company will continue at the yard at West Superior. The headquarters of the company, however, will be in Duluth for convenience in handling the business of the company. The change is slated to take place April 1.

Capt. L. E. King, of Duluth was commissioned by Duluth people to go down the lakes and treat for the purchase of a steamboat and consort for the lumber trade. He has returned, but he bought no boats. He reports that lumber tonnage has advanced from 50 to 75 per cent. during the past three or four months and that there is great strife among the big lumber dealers to obtain the tonnage in order that they may protect themselves as far as possible against extremely high rates for transporting their commodity, which is not a remote possibility this year by any means.

The quiet spell in lumber circles at the head of the lakes has been broken. Two sales amounting to a little over 16,000,000 feet have been made by Duluth firms to some Albany dealers. Twelve million feet of the stock sold belongs to Richardson & Avery and is being sawed at the Scott-Holston mill. The other 4,000,000 feet is Merrill-Ring stock and is to be sawed in the spring. Another large deal is that of Knight & Vilas selling 6,500,000 feet of lumber to Rettinghaus & Embree, Chicago. The arrangements were made through J. E. Byrnes, the representative here of Rettinger & Embree's interests. The Soper Lumber Co., Chicago, have also purchased 2,000,000 feet through Messrs. Comstock & Davis. An option only was taken on the second million feet, but it is now thought that this has been closed.

It is probable that lumber shipments from the head of the lakes for 1900 will aggregate 500,000,000 feet, and may even exceed that amount, as considerable may go forward on rail. The shipments by lake will be upwards of 400,000,000 feet despite the high freight rates that will probably have to be paid. The lumber sales that have been closed by Ashland lumbermen for Chequamegon bay lumber are said to make a total over three times as great as those of any one year previous. The estimated total is 227,000,000 feet, which is said to be rather under than over the true amount. Among the big sales reported are those by the Keystone Lumber Company of 50,000,000 feet; the John O'Brien Lumber Company 30,000,000 feet; W. H. Gilbert for the Murray mill cut 25,000,000 feet; Bigelow & Co., 26,000,000 feet, and numerous others ranging from one million to fifteen millions.

The little town of Port Wing, on the south shore, at the mouth of Flag river, and about 30 miles east of Superior, is likely to be improved in the near future, so as to make it quite a shipping point. Major Sears, Corps of Engineers, U. S. A., has visited the place on one or two occasions, and reports that "The citizens of the place have expended some $19,000 in building piers and dredging out between them and for 1,000 feet or so inside. This channel, though narrow, is in good navigable condition and permits vessels drawing 13 feet to get in and lie up alongside the lumber dock. A substantial saw mill is in active operation. It can cut 75,000 or 80,000 feet B. M. of lumber a day of twenty-four hours, and its capacity can be easily and cheaply increased by putting in an additional saw. This mill is reported to have cut during the past summer 8,500,000 feet B. M. and it is claimed that some 9,000,000 feet B. M. of lumber have been shipped since the establishment of the port.

Clinton B. Sears, Corps of Engineers, U. S. A., in charge of the conservancy and improvements of rivers and harbors within this district, has just completed his annual and comparative report concerning the receipts and shipments of the ports of Superior and Duluth. The report shows the receipts and shipments of the entire harbor for five years past and during that period they have nearly doubled in bulk. The comparative statement for the five years is as follows:

	Receipts and Shipments	Valuation
1895	6,325,351	$ 95,000,000
1896	7,886,833	111,676,900
1897	8,475,224	118,551,185
1898	10,127,261	142,643,020
1899	11,608,088	157,143,966

Of this amount, the report shows that Superior's shipments amounted in value to $57,464,014 and Duluth's shipments amounted to $59,486,131. The iron ore and lumber

valuations are what give Duluth the advantage. In receipts Superior's valuation is $18,889,117, and Duluth's $21.304,704. The bulk of Superior's receipts is given as nearly twice as great, but the high valuation placed upon the general merchandise received at Duluth makes that total larger. In tons Superior's receipts were 1,901,883 and Duluth's 1,189,-542. Major Sears has been compiling statistics of the Duluth-Superior harbor for five years, beginning with the season of 1895. All vessels arriving and departing from the harbor are required to report to him the amount and nature of their cargoes, registered tonnage and other particulars bearing on the importance of the traffic. The advantage of these reports are that they contain very accurate figures of the cargoes of the boats.

CLEVELAND.

Special Correspondence to the Marine Record.

Capt. Majo, of Duluth, spent Tuesday in the city, starting west again in the evening.

Much sympathy has been expressed for Capt. Edward Morton, ships-husband of the Wilson Transit Line, on the death of his wife this week.

Messers. J. M. Hahn & Co., are the purchasers of the steamer Shrigley and the consort Shawnee this week. Hahn & Co. are large users of lumber and will carry their own cargoes.

Iron ore men having under season charter about 90 per cent. of the total lake tonnage will no doubt reap a rich harvest by re-chartering during part of the season at going rates.

The large steel steamer Gen'l O. M. Poe, built by the American Ship Building Co., at the local yards, to the order of the Bessemer Steamship Co., will be launched this (Thursday) afternoon at 2 o'clock. The Poe is a sister ship to the Houghton, and one of the largest class of cargo boats built.

The Carnegie Steel Co., owners of the fleet known as the Pittsburg Steamship Co., will open a general marine supply store and warehouse this summer, at Conneaut. As the fleet of boats trade there, the supply depot will be found very convenient.

Capt. E. T. Rattray has sailed Cleveland vessels for many years. He commanded the Magnetic, Grace Holland, Specular, Joliet and Republic. He sailed the steamer Republic last year and this season he will have charge of one of the Carnegie steamers.

A number of large carriers are under charter to load grain at Duluth and Fort William during the first ten days after the opening of navigation, at 3½ cents. Some of the vessels were chartered early last fall before the season rates on ore for 1900 were made.

The officers of the Cleveland & Buffalo Transit Co. are M. A. Bradley, president; George W. Gardner, vice president; R. C. Moody, treasurer, and T. F. Newman, secretary and general manager. The directors are the above-named, with H. D. Goulder and Daniel Shurmer.

The tug firemen of this port were organized this week by Harry Thomas and W. J. Werner of the Central Labor Union. The firemen are being better paid now than ever before. The Great Lakes Towing Co. recently raised the wages of tug firemen and the independent line met the increase.

Vessel men are commencing to figure on the opening of the season of navigation. They have been watching the condition of the ice both here and in the upper lakes and have come to the conclusion that general navigation will be opened about the middle of April. It may be that the lower lakes will be navigable before that time, but it is not thought that the Straits of Mackinac will be passed much before April 15.

The launch of the Jas. J. Hill from the Lorain yards of the American Ship Building Co., on Saturday afternoon last, was a perfect success, and marks one of the most even and well executed launches of the year. Mrs. A. T. de Forest, wife of the local manager of the American Steel & Wire Co., performed the ceremony. The Hill is one of the 500-foot, 8,000-ton craft, two more of which are building to the order of the Pittsburg Steamship Co.

I heard of a case this week where pilots' licenses are being limited to tonnage; that, of course, is partly the old style, and introduces salt water methods. A branch pilot can conduct anything drawing, say up to 9 or 14 feet, but it takes a full branch to handle anything above the 14 foot limit, however, one is draft and the other tonnage. I'll endeavor to look more fully into this innovation in a few days, for the benefit of the RECORD readers.

It is announced that an arrangement has about been completed by the Lake Erie Transportation Co., which operates between this city and Rondeau and Port Stanley, Ont., and the Canadian Pacific railway, under which one and possibly two steamers will be put on the route next summer. These boats will make both day and night trips to Rondeau and Port Stanley, and connection with the Canadian Pacific will be made at London by way of the Lake Erie and Detroit river road for the east and west.

Capt. Thomas Wilford is one of the old-time masters that has followed the lakes from boyhood. He has been sailing for about forty years and has been very successful. He brought out the steel steamer J. H. Wade in 1890 and has commanded the steel steamer Samuel Mitchell since she came out in 1892. Capt. Wilford resides at Lorain, but visits Cleveland quite frequently during the winter. It has been remarked that Capt. Wilford carries his weight of experience and years, as well, or better, than any man now sailing. One thing, he comes from good old stock and has always taken the best of care of himself.

The death of Capt. James Davis, at the Marine Hospital, which occurred on Friday night last, ends the career of a pioneer in lake navigating. Capt. Davis sailed the lakes for nearly fifty years and was seventy-six years of age at the time of his death. His home was formerly in Erie, Pa., where the remains were sent for burial Monday. For several years the captain had been living with an adopted daughter in this city. A son survives him. Since last October Capt. Davis has been a patient in the Marine Hospital, a victim of Bright's disease. Capt. Davis sailed each season and always thought that he could do his work with the best afloat. He had a rugged constitution and was completely devoted to the business of sailing.

In presenting the lake carriers views of maintaining lake levels, before the House Committee on Rivers and Harbors, Harvey D. Goulder, Esq., stated that the cargo carrying interest and the cognate ore and iron enterprises represented a capital of $500,000,000. Lake shipping is capitalized in itself at $300,000,000. Lake carrying investments have increased since 1890 by 180 per cent. If the "Soo" level be lowered one inch we would lose $225,000 a year. The lake and allied interests would lose five times that amount. I understand that it is within possibility that the canal may lower the level by two and one-half inches. The resultant loss would be $562,000 a year to lake shipping, many iron mills would have to close and all interests would suffer to the extent of $2,830,000 the first year.

The firm of Pickands, Mather & Co., shippers of iron ore and pig iron and owners of a large fleet of vessels, is one of the wealthiest and best known firms on the lakes. The members of the company are Samuel Mather, Jay C. Morse, H. G. Dalton, W. P. Murray and J. H. Dalliba. The firm has been established for many years and its growth has been rapid, until now it controls vessel property and iron interests amounting to many millions of dollars. The immense iron ore property of the company is located in the Mesaba range on the north shore of Lake Superior and its coal property lies in the Pittsburg district, where the Pittsburg Coal Co. has absolute sway. The Pittsburg Coal Co. is the great syndicate which the Pickands, Mather & Co. entered on the understanding that they should retain their individuality in their coal operations. The number of men employed on the fleet of vessels operated by the company reaches nearly 800. Besides its other great interests the company also has furnace property. Pickands, Mather & Co. were the first to operate a coal dumping machine on the lakes. Their facilities for handling ore on Lake Superior and at Ashtabula are the very best. Last year the fleet of vessels operated by the company numbered fifty-four, among which, beside the entire fleet of whalebacks, were some of the largest steel steamers and tow barges ever put afloat and to which several more will be added on the early opening of navigation.

A newspaper reporter can obtain the names of prisoners from the police blotter, but eighteen reporters lashed together couldn't get the Cleveland local inspectors of steamboats to divulge the name of a man to whom they have issued a license to act as a steamboat officer since January 1. I can get at the register of births and deaths or marriages or any old license records of that sort, but the secret service daybook of the steamboat office is like the Koran, only to be looked at by the elect. I learn, too, that it is the same at other ports, wonder if all the local inspectors are sworn not to divulge the names of those they are compelled to issue licenses to? and, if they will live up to their oaths until next January, as they have so faithfully done in the past? I can relieve their consciences of a few names which they won't have to keep secret and p'raps I will scare up a few more for the next issue of the RECORD. Pilots Bennett, Sweeney, Ferguson and Albert Lorvest, 102 Tennesee street are all O. K. so is Capt. Andrew Corvig, who got his almighty document on the 10 inst. I also believe that Oscar Oleson 112 Whitman street, James Laird 65 Church street, Henry Kelley 11 Wall street, James Swinton, who was in the Volunteer, have also got through the meshes of the service, but of these names I am not yet quite sure, the names of a few others to be examined are at hand, but this is enough and p'raps too much of this stuff at this time. Would like to hear from your Chicago man and other correspondents before the licenses are taken from the men to be hung up in a light frame aboard of their vessels.

CHICAGO.

Special Correspondence to The Marine Record.

Capt. Jas. S. Dunham arrived at Naples on Monday last.

Grain freights remain firm at 2¾ cents on corn to Buffalo.

Capt. H. L. Shaw, of Bay City, was in Chicago Tuesday.

Capt. Charles Maytham, of Buffalo, was in Chicago Monday.

The steamer Isabella J. Boyce has been sold by Jonathan Boyce, of Bay City, to the Kelly Island Lime Co., Cleveland.

Capt. J. T. Johnson has purchased a one-half interest in the schooner Lake Forest from E. P. Hinds, and will sail her next season.

Capt. Smith, of Milwaukee, who was mate of the steamer G. G. Hadley last season, has been appointed master of the steamer Panther for the coming season.

The second steel schooner building at the South Chicago yard of the American Ship Building Co., will be named Marsala. She will be an exact duplicate of the Madeira.

Articles of incorporation have been granted to Daniel Peterkin, Joseph P. Tracy and Edw. Fredericks for a company to be known as Joy, Morton & Co., capitalized at $50,000, to run a boat line between Chicago and Saginaw in the salt and starch trade. The steamers will be run in the name of the Illinois, Indiana & Michigan line. The boats to be put on the route is not yet decided, nor whether the company will handle other freight besides its own.

The tug J. C. Ames is in dock receiving new ceiling and frames amidships, strakes of plank, stanchions and rail. The steamer S. S. Wilhelm is in for calking butts and a new wheel. The tug Leslie is receiving part new stern, stringers and rail. The barge Annabell Wilson is receiving a new stern. The Lehigh, Anchor and Western line steamers laid up at this port are receiving extensive repairs. The steamers Chas. Hebard and Oregon and barge Aloah have had repairs completed.

The Newport mine, Lake Superior, has commenced shipping ore to the Illinois Steel Co. About two hundred tons will be shipped daily by rail until the opening of navigation. This makes three mines that are making rail shipments to Chicago this winter, an action which had a precedent about nine years ago. The Ashland mine ships daily to the Illinois Steel Co., over five hundred tons, or just twice as much as the Newport. Carey mine, which inaugurated rail shipments immediately after the close of lake navigation, is making daily shipments of about three hundred tons.

The steamer Amazonas caused considerable trouble and delaved traffic at the Fort Wayne railroad bridge from 1 p. m. Friday until 7 p. m. Saturday. The Amazonas loaded grain at the Indiana elevator heading down the river and was to be towed stern first up the river to 22nd street. The tugs J. C. Evans and O. B. Green started to pull her bow into the west draw of the Fort Wayne railroad bridge when the rapid current carried her across the river. The water was shut off at Lockport by order of the drainage trustees and the steamer was released at 7 p. m. Saturday.

"Dutch Fritz," the diver, who claims his name is only known to six people in Chicago, will make the necessary preparations for the raising of the old tug Tom Brown, sunk in Lake Michigan Tuesday. The tug lies at the bottom of the lake, about a mile off the shore line, at Madison street. It is the property of Capt. John Harmon, and a hole was stove in her side while assisting the Robert E. Burke to run a passage to the harbor from the two-mile crib. The diver, at a propitious time, will rig a chain net under the vessel, which will enable a pair of piledrivers to lift it. "Dutch Fritz" has been a diver here for twenty years.

The immense water power of the new drainage canal, estimated to be worth millions of dollars, is to be utilized and controlled by the municipal government, if plans laid by Mayor Harrison are carried to a conclusion. The passage by the city council last Monday night of an ordinance authorizing the issuance of $2,500,000 bonds for the construction of a power plant at Lockport is but a step in the movement to secure the power for municipal purposes and the necessary legislation will be pressed to secure the water energy for Chicago. The power thus secured will be used for lighting the streets and all public buildings and to furnish bridge and waterworks power.

The American Shipbuilder, New York, stated last week that Mrs. Morton, wife of the master of the American ship Swallow, was the "first white woman to visit Hong Kong" and that she arrived there in 1859. Mr. W. I. Babcock, president of the Chicago Ship Building Co., calls the turn on the report by stating that in 1851, eight years earlier, my mother, who is now living in New York, arrived at Hong Kong in the American ship Swordfish, of which my father, the late D. S. Babcock, was in command. She writes me that "there were any number of American, as well as English, ladies living there at that time, and I was called upon by them and invited to several lunches and dinners and received much attention while there."

There is no use of putting any other complexion on the matter, for Chicago is up against a hard old problem in handling tonnage in the river. Since the drainage canal supply began to flow, the controlling works at Lockport has been compelled to shut off the current on two occasions and hardly any vessels have been moved yet. The drainage canal commissioners ought to cut a canal so as to relieve the river, or do some other innovation. The subject is too large for me to make even a suggestion, but, it will soon be good-bye, fare-you-well to the general traffic in the Chicago river if some radical steps are not taken at once to minimize the effects of the current. The influential marine interests that Cleveland boasts so much about now and again, have been caught napping, and there is great danger of their 500-foot steel boats being compelled to tie up at docks for floating warehouses, unless their owners soon take a hand at looking out for the highways over which their huge tanks have to travel. What Chicago has done, half a dozen other ports can do and then we will have to go back to the 400-ton bottoms again.

IN the United States court at Tacoma, Wash., Judge Hanford has rendered an important decision in admiralty in the libel suit of three sailors against the schooner Ida McKay, holding that masters of vessels must provide a safe and warm room for use of sailors in cold weather.

FUTURE SOURCES OF POWER.

"Present and possible sources of power," was the subject upon which Professor T. G. Mendenhall, recently of the Worcester Polytechnic Institute, addressed the members of the Twentieth Century Club of Boston.

He showed that the invention of the steam engine, by making coal a source of energy, has placed at the disposal of the race an amount of 50 per cent. greater than the muscular power of the entire population of the earth, assuming that all are able to work. But the supply of coal is rapidly being used up. Last year 600,000,000 tons were obtained from the earth. Of this quantity the United States furnished 215,000,000 tons, England 210,000,000, Germany 90,000,000, France 29,000,000, Belgium 22,000,000 and the other nations about 34,000,000. Having regard to the continually increased rate at which coal is being consumed, the present known supply will disappear, according to expert geologists, in about fifty years from now.

Hence, it will become necessary to look for some other sources of energy, and the speaker briefly considered such sources as water power in form of waterfalls, the power of the tides (representing the energy of the earth's rotation), solar heat, and the internal heat of the earth. The speaker looked forward to the necessity, even within the next twenty-five years, of resort to some one or other of these sources. He did not see any difficulty in getting power from tidal coasts and rivers in various parts of the country and transmitting it by electrical current to the industrial centers were it is needed. To utilize the energy of the earth's rotation would not diminish the rotation by more than one second in one hundred years, even though we used an enormously greater amount than we have any demand for.

NEW YORK STATE CANALS.

The important questions relating to canals in the State of New York were referred to a committee of which Major Thomas W. Symons, U. S. Engrs., was the chief engineering member. In their report to Governor Roosevelt, they conclude, first, that the canals connecting the Hudson river with Lakes Erie, Ontario and Champlain should not be abandoned, but should be maintained and enlarged; and that the Black river and the Cayuga and Seneca canals should be maintained as navigable feeders, but that they should not be enlarged at the present time. Second, that the project of a ship canal to enable vessels to pass from the Upper Lakes to New York City (or beyond) without breaking bulk is a proper subject for consideration by the Federal Government, but not by the State of New York; and, third, that the project of 1895 for the enlargment of the Oswego and Champlain canals should be completed at a cost of $2,642,120. It is proposed that the State either complete the work undertaken in 1895, with certain modifications, at an estimated cost of $21,161,645; or that it should undertake a new plan, to construct a canal along the old route, but of sufficent size to carry boats 150 feet long, 25 feet wide, and of 10 foot draft, with cargo capacity approximating 1,000 tons. Such a canal would be capable of carrying a tonnage equal to the capacity of the St. Lawrence canals, and would cost $58,894,668. The State of New York has to face serious competition in the export trade over the St. Lawrence. The Dominion of Canada has in the last fifty years spent $56,000,000 on the construction and enlargement of this route, a sum which bears the same ratio to Canadian resources that $100,000,000 bears to the wealth of the State of New York.

The Canal Committee state that in their judgment New York should undertake the larger project of canal construction, on the ground that the smaller one is at best a temporary makeshift, and that the larger project will permanently secure the commercial supremacy of the State, and that this can be assured by no other means. They answer strongly in the negative the question whether canals should be abandoned altogether. The Erie canal opened up the great West to settlement, and in turn attracted the products of the West to New York. The tolls on this waterway have more than repaid the cost of construction, maintenance and operation; in addition it has paid over $360,000,000 of freight money within the limits of the State, and the disbursement of this money along the line of the canal has built up the great interior cities of Buffalo and Albany, forming a continuous line of commercial centers, which has no counterpart in any other State. Water transportation is, in the judgment of the committee, inherently cheaper than rail transportation. Varying with the size of the vessel and the restrictions of the waterway, it amounts to but half a mill per ton on the ocean, where the size of the vessel is at its maximum and the waterway unrestricted. On the lakes it is about six-tenths of a mill per ton mile. There is no reason why the canals, if enlarged and properly managed, should not compete for the higher grades of freight which, at prices below those charged by the railroad, would bring very profitable returns on the lakes and canals. On the continent of Europe in the past ten years canals, far from being decadent, have constantly been enlarged and improved. Enormous sums have been spent on them, and the result has been an extraordinary increase in this class of transportation.

The committee does not favor the construction of a deep-water ship canal, which has been approved by a growing sentiment which led Congress to appropriate $465,000 to make necessary surveys and estimates of its cost. Certain insuperable difficulties would, they believe, stand in the way of its success. It is intended to be used by a vessel which can navigate the ocean, the canal and the lakes. Such a vessel, they hold, cannot be constructed so as to be economically and commercially successful. Various estimates place the cost of a ship canal at from $125,000,000 to twice or three times that sum.

The committee present estimates for the enlargement of the canal system which they consider most feasible, to create a canal not less than twelve feet deep throughout, with not less than eleven feet of water over locks and all structures. These estimates were prepared under the personal direction of Major Symons, Corps of Engineers, U. S. Army, who also procured from boatbuilders, canal boatmen and every other available source data bearing upon the actual cost of running boats of different sizes.

TO ABOLISH TRUSTS.

Mr. James J. Hill, president of the Great Northern Railroad, who has had much experience in the management of corportions, and whose ability has been attested by success, makes the following suggestions for curbing an admitted evil :

The way to abolish trusts is to make stockholders liable. If trusts when organized were compelled to demonstrate to the legal authorities that every share of stock issued had been fully paid up on a par basis, a very long step would be taken in a remedial way.

In addition thereto the stockholders in every trust organization should be made responsible for ultimate losses in double the amount of the par value of their stock precisely as banking institutions are now organized.

Thus it would happen that every time a man of property put out a share of stock from an organized trust he would be liable not only for the money which he had already put in, but for as much more, in case any loss was sustained by the public on account of this organization.

It would be about as hard to float a new trust under such conditions of personal liability as to organize a million dollar bank in a thousand dollar town. If Congress had the power required to put Mr. Hill's programme of publicity and paid-up share-holders into operation, it would do much to make trusts impossible by making them unprofitable to promoters and speculators.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Buffalo	1,374,000	48,000	132,000	69,000	733,000
" afloat	283,000	205,000	.....	.....	.....
Chicago	14,910,000	4,670,000	1,510,000	193,000	21,000
" afloat	85,000	2,390,000	158,000	.....	.....
Detroit	457,000	339,000	70,000	10,000	22,000
Duluth	9,663,000	746,000	162,000	391,000	165,000
" afloat	248,000	.....	.....	.....	.....
Fort William, Ont.	3,107,000	.....	.....	.....	.....
Milwaukee	260,000	.....	.....	13,000	12,000
" afloat	.....	10,000	477,000	.....	.....
Montreal	54,000	18,000	359,000	14,000	28,000
Port Arthur, Ont.	218,000	.....	.....	.....	.....
Toledo	1,042,000	1,553,000	147,000	6,000	.....
Toronto	63,000	.....	3,000	....	49,000
Grand Total	53,445,000	16,333,000	5,755 000	1,152,000	1,341,000
Corresponding Date, 1899	29,920,000	31,821,000	9,369,000	1,594,000	2,674,000
Increase	225,000	1,519,000	12,000	6,000	.....
Decrease	.....	.....	.....	.....	81,000

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

GEN. FRANCIS V. GREENE, chairman of the New York special canal committee, has given out a statement in which he summarizes the leading propositions in the plan for the improvement of the Erie canal. His first point is that an adequate canal can transport freight at prices from one-third to one-fourth of the lowest ever charged by the railroads. The capacity of such a canal is 20,000,000 tons per annum, and on this tonnage the saving in cost of transportation will exceed $18,000,000 per annum. Another point made by Gen. Greene is that cheap water transportation across the State will not injure, but will benefit the railroads of the State of New York by increasing the population and wealth and introducing new industries, such as steel making and shipbuilding. This will give them more passengers to carry and more local freight, from which their profits are chiefly derived.

NOTES.

ADAM MACKAY, Hamilton, Ont., who has returned from Scotland, says the two new boats being built for the Hamilton and Fort William Navigation Co., will be ready by June 1.

THE new wharf to be built by the Richelieu & Ontario Navigation Co. at tke foot of Scott street, Toronto, will be completed by the 1st of April, and will coat $23,000. The wharf will be 357 feet long and 54 feet wide. On it will be erected freight sheds, waiting rooms and ticket offices for both the Hamilton Steamboat Line and R. & O. Co.

SOMETHING of the broadness of the sea, its openness to nature, creeps into the composition of those who habitually associate with it; in some subtle way they seem to reflect its heartiness without a touch of its treachery, if we can call that treachery which arises mainly from our blind interpretation of its moods. So the mariner is even more interesting than the element he sails upon. He is nature's creature, and as truly the typical representative of the sea as the woodland creatures are of their forest wilds. How its vastness and its dangers affect him in his struggle against it, that is what we are eager to learn.—New York Marine Journal.

IN THE future the relations of Admiral Dewey to the Navy Department will be simply of an advisory nature. He will be consulted, however, only in important matters and will not be called upon to consider those of minor importance, which constantly come before the various bureaus of the department, and which so often lead the bureau chiefs into acrimonious discussions. From the present outlook there is no possibility of there being an admiralty board formed. In case, however, it ever becomes necessary for such a board to be formed, Admiral Dewey will naturally be its presiding officer, and the other members will all be high ranking officers of the Navy.

THE idea of Government shipyards, that has been so vociferously applauded in certain circles, is one of those governmental functions that are put forward with such frequency in these days of "reforms." If this idea should be carried to fruition the result would be a blow at the shipping interests of the country which to-day find support and encouragement in the contracts they receive from the Government. Once all our warships are built in Government shipyards, there will follow a languishing in private shipbuilding that will react disastrously upon our merchant marine. Nor will such a change bring any marked advantage to our Navy. For a time perhaps the quality of the work turned out might keep close to the old standards but it would soon fall below the high demands which are set by competitive enterprises and by which the Government should always be in a position to profit. One of the chief indictments of the British War Office to-day is that it has depended upon government works and factories for its material, while the Boers made their purchases in the markets of the world, thus securing the latest, most effective and therefore the cheapest artillery, etc., that could be procured.—The Army and Navy Journal.

A YACHT which will, if it comes up to expectation, steam 50 miles an hour, is being built for Charles R. Flint by Samuel Ayres & Son, Nyack, N. Y. She is to be called the Arrow, and to be launched by the end of May. According to the New York Herald Mr. Flint desired a yacht which would test the theoretical possibilities of speed on water. The boat was designed by Mr. Mosher, and will carry boilers of the Mosher water tube type. Her length is 130 feet 4 inches, with a beam of only 12 feet 6 inches. Carrying engines almost as powerful as those of an ocean liner, her hull will weigh only 22 tons. Her two boilers give 4,000 horsepower in all, supplying steam to two quadruple-expansion engines which operate two screws. Engines and boilers weigh a little over 32 tons, giving the yacht a total displacement when coaled and ready for service of about 67 tons. She will have a draught of three and a half feet, and five feet freeboard. Total coaling capacity will be 30 tons, giving a steam radius of 3,000 miles, making it more than possible for the Arrow to cross the Atlantic in good weather. She is to be so constructed, it is said, that she can readily be converted into a torpedo boat and her services offered to the Government in case of another war. With minor changes in her fittings in 48 hours she can be armed with four one-pounder rapid-fire guns and two torpedo tubes. Her boilers are built by the Crescent Ship Building Company, of Elizabethport, and her shafting by the Bethlehem Steel Co. The lightness of her hull will be due in part to the large use of aluminum in construction.

TRAFFIC OF ST. MARY'S FALLS CANALS.

COMPARATIVE STATEMENT OF LAKE COMMERCE THROUGH UNITED STATES AND CANADIAN CANALS AT SAULT STE. MARIE, MICH., AND ONTARIO, FOR THE SEASONS OF 1898 AND 1899.

Items.	Traffic for 1899.		Total Traffic for		Increase, 1899.		Decrease, 1899.	
	Unit'd States Canal.	Canadian Canal.	Season 1899.	Season 1898.	Amount.	Per Ct.	Amount.	Per Ct.
Vessel passages:								
Steamers, number	11,230	3,148	14,378	12,461	1,917	15	.....	....
Sails, number	4,282	494	4,776	4,449	327	7	.....	....
Unregistered, number	968	133	1,101	851	250	29	.....	....
Total, number	16,480	3,775	20,255	17,761	2,494	14	.....	....
Lockages, number	8,389	2,610	10,999	9,533	1,466	15	.....	....
Tonnage:								
Registered, net tons	19,021,489	2,936,858	21,958,347	18,622,754	3,335,593	18	.....	....
Freight, net tons	22,252,139	3,003,671	25,255,810	21,234,664	4,021,146	19	.....	....
Passengers, number	33,664	15,418	49,082	43,426	5,656	13	.....	....
Coal:								
Anthracite, net tons	732,213	199,068	841,281	540,843	300,438	56	.....	....
Bituminous, net tons	2,543,397	556,209	3,099,606	3,235,607	.....	....	136,001	4
Flour, barrels	6,113,013	1,001,134	7,114,147	7,778,043	.....	....	663,896	9
Wheat, bushels	45,542,364	12,854,971	58,397,335	62,339,996	.....	....	3,942,661	6
Grain, other than wheat, bushels	28,341,850	1,659,085	30,000,935	26,078,384	3,922,551	15	.....	....
Manufactured and pig iron, net tons	210,018	4,567	214,585	250,170	.....	....	35,585	14
Salt, barrels	271,569	44,767	316,336	301,560	14,776	5	.....	....
Copper, net tons	115,643	4,417	120,090	124,226	.....	....	4,136	3
Iron ore, net tons	13,653,225	1,675,015	15,328,240	11,706,960	3,621,280	31	.....	....
*Lumber, M. ft. B. M.	1,024,675	13,382	1,038,057	895,485	142,572	16	.....	....
Silver ore, net tons	487	.....	487	.....	487	....	.....	....
Building stone, net tons	38,863	200	39,063	4,670	34,393	736	.....	....
General merchandise, net tons	509,335	78,149	587,484	623,146	.....	....	35,662	6

COMPARATIVE STATEMENT OF FREIGHT VALUATIONS FOR THE SEASON OF 1898 AND 1899 THROUGH ST. MARY'S FALLS CANAL, MICHIGAN AND ONTARIO.

Year.	Coal, hard.	Coal, soft.	Flour.	Wheat	Grain, other than wheat.	Manufactured Iron.	Pig Iron.	Salt.	Copper.	Iron ore.	Lumber.	Silver ore.	Building stone.	General merchandise.
1898	$4 75	$2 40	$4 25	80c	50c	$ 50 00	$ 13 25	75c	$240 00	$3 00	$14 50	.....	$10 00	$60 00
1899	5 70	2 60	3 60	75c	59c	100 00	19 50	75c	320 00	3 40	17 00	$125 00	12 00	90 00
Inc.	95	20	.....	.....	09	$ 50 00	$ 6 25	.....	$ 80 00	40	$ 2 50	.....	$ 2 00	$30 00
Dec.	.....	.....	65	05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Grain, other than wheat.	Bushels.	Price per unit.	Total value.
Rye	1,413,216	$0 53	$ 749,004 48
Oats	4,538,181	0 27	1,225,308 87
Corn	10,614,117	0 31	3,290,376 27
Barley	4,516,722	0 37	1,671,187 14
Flax	8,918,699	1 20	10,702,438 80
Total	30,000,935		$17,638,315 56
Average value, 59c.			

The relative values of the different commodities are as follows:

	Per Cent.
Coal, anthracite and bituminous	4.5
Cereals, wheat, rye, oats, corn, barley, flax and flour	31.0
Iron, iron ore, manufactured and pig iron	25.5
Copper	13.7
Lumber	6.3
All other products	19.0

TABLE SHOWING LAKE PORTS FROM AND TO WHICH THE EAST AND WEST BOUND FREIGHT WAS TRANSPORTED.

East Bound. From Lake Superior Ports to		West Bound From Lower Lake Ports to Lake Superior.	
Ports.	Net Tons	Ports.	Net Tons.
Lake Huron	808,645	Lake Huron	145,408
Lake Michigan	1,848,189	Lake Michigan	111,523
Lake Erie	17,677,713	Lake Erie	4,351,663
Lake Ontario	284,987	Lake Ontario	27,682
Total	20,619,534	Total	4,636,276

ESTIMATED VALUE OF FREIGHT PASSING ST. MARYS FALLS CANAL, MICHIGAN, AND SAULT STE. MARIE, ONTARIO, FOR THE SEASON OF 1899.

Items.	Quantity.	Price per Unit.	Valuation.
Coal, (Anthracite), net tons	841,281	$ 5 70	$ 4,795,302
Coal, (Bituminous), net tons	3,099,606	2 60	8,058,976
Flour, barrels	7,114,147	3 60	25,610,929
Wheat, bushels	58,397,335	75	43,798,001
Grain (other than wheat), bushels	30,900,935	59	17,700,552
Manufactured Iron, net tons	191,110	100 00	19,111,000
Pig Iron, net tons	23,475	19 50	457,762
Salt, barrels	316,336	75	237,252
Copper, net tons	120,090	320 00	38,428,800
Iron Ore, net tons	15,328,240	3 40	52,116,016
Lumber, M. Ft. B. M.	1,038,057	17 00	17,646,969
Silver Ore, net tons	487	125 00	60,875
Building Stone, net tons	39,063	12 00	468,756
General Mdse, net tons	587,484	90 00	52,873,560
Total	.....	.....	$281,364,750

Average value per ton of freight for season of 1899, $11 14.
Average value per ton of freight for season of 1898, $10 98.

MARINE PATENTS.

Patents on marine inventions issued Feb. 20, 1900. Reported specially for the MARINE RECORD. Complete copies of patents furnished at the rate of ten cents each.

643,746. Propeller, C. E. Hansen, Chicago, Ill.

643,678. Water-cycle. S. R. Perry, Worcester, Mass.

643,688. Life-preserver. Jacob and Hyman Silbar, Milwaukee, Wis.

643,752. Chain propeller. W. C. Raub, St. Louis, Mo.

643,766. Apparatus for raising sunken vessels. Joseph Grant, Colorado Springs, Colo., assignor to the Empire Wreckage and Salvage Co., same place.

643,863. Floating pump. W. S. Bryant, Boston, Mass.

643,966. Reciprocating propeller. James Lichetti, Philadelphia, Pa.

643,980. Bow-facing oar. H. M. Roberts, Vickery, and John Fitzgerald, Port Clinton, Ohio.

642,590. Audible-Signal System. Robert M. Dixon, East Orange, N. J.

642,601. Reversible Propeller-Wheel. George H. Gere, Grand Rapids, Mich.

642,622. Life-Boat. William P. Mulie, Leyden, Netherlands, and Benjamin Hymans, van den Berg, Antwerp, Belgium.

642,935. Current-Motor. Robert S. Theall, Fort Pierre, S. Dak.

ACCORDING to the Liverpool Post, a local firm, being delighted at the idea that one of its employes was called up to join the reserves, at once volunteered to pay half his wages to his wife in his absence. At the end of the month the woman appeared, and the moiety was at once given to her. "What?" she said, "four pound?" "Yes" replied the senior partner, "that is exactly half; sorry you are not satisfied." "It isn't that I'm not satisfied; why, for years he has told me he only got 16 shillings altogether, and—and—if the Boers don't kill him, I will."

FEW persons have the faintest idea of what the coal consumption of an ocean monster like the White Star liner Oceanic amounts to. The horse-power of her main engines is 28,000, and that does not include a number of small engines for pumping, hoisting, etc. She burns between 500 and 600 tons of coal every 24 hours while under way. To show how the Oceanic transcends that leviathan of earlier years, the Great Eastern, it is interesting to recall that the length of the latter was 680 feet; that the Oceanic is 704 feet. The former's light draft was 15 feet, the latter's is 22 feet. Their respective light displacements are about 12,000 tons and 18,000 tons, and weight of hull, 8,000 tons and 12,500 tons, and when voyaging the Oceanic weighs about 28,000 tons, against the Great Eastern's 25,000 tons.

SHIPPING AND MARINE JUDICIAL DECISIONS.

(COLLABORATED SPECIALLY FOR THE MARINE RECORD).

Construction of Contract.—Under an agreement for towage in accordance with a schedule of rates based upon the tonnage of the vessel, the amount of the charge is to be determined by the actual tonnage, as to which the statement of the Lloyd's resgister, while, no doubt, generally correct, is not conclusive. The Quevilly, 98 Fed. Rep. (U. S.) 635.

Unseaworthiness.—Whether a vessel was unseaworthy because water which entered a certain quarter could not be reached by her pumps, when there was evidence that the vessel was well fitted with pumps adapted to all ordinary conditions, was for the jury. Starbuck et al. vs. Phenix Ins. Co. of Brooklyn, N. Y., 62 N. Y. Supp. 264.

Maritime Liens—Release of Vessel on Bond—Discharge of Lien.—A vessel which, after being seized upon a libel, is released on giving a bond to secure the demand of the libelant, cannot be arrested a second time for the same cause of action, unless her discharge was obtained through fraud or mistake, even where the libel is dismissed without prejudice. The Cleveland, 98 Fed. Rep. (U. S.) 631.

Contributory Negligence.—Although the master of the tug had often used the dock before, and knew its condition, *held*, that he was not required to know the exact line of the jetty, and a swerving of a few feet, sufficient to strike it, would not charge him with contributory negligence. A photograph of the jetty, taken three months after the accident, is competent to show its condition. Tracy vs. Baltimore & O. R. Co. et al., 98 Fed. Rep. (U. S.) 633.

Negligence—Maintenance of Jetty—Insufficient Marking.—Where a jetty which was built to protect a dock from mud that would be carried in by the tide, was suffered to be pressed out of line by the mud deposited against it, and was not visible at high tide, nor marked in any way except by a group of piles at the extreme end, the dock owners were held liable for an injury to a tug which struck the submerged and projected portion of the jetty while attempting to back out of the dock. Tracy vs. Baltimore & O. R. Co. et al., 98 Fed. Rep. (U. S.) 633.

Marine Insurance — Seaworthiness — Presumption.—Though there was a presumption of unseaworthiness from the entry of water through the open porthole of a vessel shortly after sailing, and before encountering any storms, on evidence that the deadlights were of the best character, with backers to protect them, were fit for the vessel and the employment she was engaged in, were in good order at time of sailing, and were closed and securely fastened, the question of seaworthiness was properly submitted to the jury. Starbuck et al vs. Phenix Ins. Co. of Brooklyn, N. Y., 62 N. Y. Supp. 264.

Wharves—Injury to Vessel in Loading.—Where the loading of libelant's canal boat, of which he was captain, with iron ore, at defendant's dock, is shown to have been under his own direction, the lever man who controlled the flow of ore through the chute into the boat being at a distance, and governed by libelant's orders as to when he should start and stop, as the boat was moved along, defendant cannot be held liable for the wrecking of the boat by the running of too much ore in one place during libelant's temporary absence from the chute, it not being shown that defendant's superintendent or the lever man was chargeable with knowledge that libelant had left the chute unattended to either by himself or a deputy. Jandreau vs. Witherbee et al., 98 Fed. Rep. (U. S.) 629.

Towage—Suit to Recover—Construction of Libel.—In a suit to recover a balance claimed to be due for towage services, an allegation in the libel that the charge for towage was made in accordance with a printed schedule of rates based on the tonnage of the vessel, which was shown to the captain of the vessel, and agreed to by him, that settlement was made on the basis of the tonnage as stated by the captain, but a corrected rate was afterwards agreed to, based upon the tonnage of the vessel required by the customs officers of the United States—cannot be construed to mean that the schedule of rates was based exclusively on the tonnage as fixed by the customs officers, but that it was based on the actual tonnage, which was, in the case in question, correctly ascertained by such officials. The Quevilly, 98 Fed. Rep. (U. S.) 635.

Shipping—Damage to Cargo—Seaworthiness.—To constitute a ship seaworthy, when she enters on a voyage, she must be fit in design, structure, condition and equipment, and she cannot be said to be fit as to condition, when both the iron and glass coverings of a port, which it is the usual custom to close and fasten before sailing, though structually fit, are through inadvertence insecurely fastened, so that, although the vessel does not encounter bad weather or rough seas, such covers become open and admit sea water, which damages the cargo. In such case the damage must be held to result from the unseaworthiness of the ship, and not from any fault or error in navigation, or in the management of the vessel, for which the owners are exempted from liability by section 3 of the Harter act, as the master was justified in supposing that the port had been closed before sailing, in accordance with the usual custom, and was not chargeable with fault in failing to cause it to be thereafter examined, although the cargo was so stored that it was accessible. Farr & Bailey Mfg Co. vs. International Nav. Co., 98 Fed. Rep. (U. S.) 636.

MARINE RECORD

ESTABLISHED 1878.

Published Every Thursday by

THE MARINE RECORD PUBLISHING CO.,

Incorporated.

C. E. RUSKIN, - - - - - Manager.
CAPT. JOHN SWAINSON, - - - Editor.

CLEVELAND, Western Reserve Building. CHICAGO, Royal Insurance Building.

SUBSCRIPTION.

One Copy, one year, postage paid, - - $2.00
One Copy, one year, to foreign countries, - - $3.00
Invariably in advance.

ADVERTISING.

Rates given on application.

All communications should be addressed to the Cleveland office,
THE MARINE RECORD PUBLISHING CO.,
Western Reserve Building, Cleveland, O.

Entered at Cleveland Postoffice as second-class mail matter.

CLEVELAND, O., MARCH 1, 1900.

THE Secretary of War is called upon to maintain the navigability of the river at Chicago.

THE thanks of the RECORD are due Major Clinton B. Sears, Corps of Engineers, U. S. A., Duluth, Minn., for an advance copy of the annual statistics of lake commerce at Duluth and Superior, for the navigation season of 1899.

ALL talk of carrying cargoes, via lake, canal and ocean, is now simply chestnutty, however bright and advanced the suggestion might have appeared a decade or so ago. The province of artificial inland waterways is to reach the coast, having done so, their utility and functions end. Let it be clearly understood that a profitable and adequate mode of transportation over a special route, is completely outclassed when placed on a different basis and under particularly contrary conditions.

SEVERAL prominent vessel owners and others connected with the lake marine industry have "crossed the pond" for the first time this winter. Of course all will be glad to get home again, they will also aver that they have seen no country as smart as the United States, at the same time, if we omit the narrow-minded bigots, (and there are quite a few of them still floating around) each will be greatly benefitted by his experiences. There is nothing like travel for broadening the mentality of the human race.

IN a case which went to the United States Supreme Court some time ago, and which concerned the right of parties to build a bridge without a draw, which was alleged to be an obstruction of navigation, the principle was enunciated by the Supreme Court that authority for any project involving navigation interests must be secured from Congress rather than from the Secretary of War. It seems wholly rational that Congress, which has jurisdiction over our navigable streams, should be responsible for any obstruction or interference with their navigability.

TWO weeks ago we called attention to the formerly projected Poe memorial to be placed at, on or near the Poe lock, Sault Ste. Marie, Mich. It has now been in a measure determined, that if the sum expended by the Lake Carriers' Association for the maintenance of necessary aids to navigation, is assumed by the Government, and the amount covered into the treasury of the Association, that a portion of the proceeds will be used for the erection of a suitable memorial to the late General O. M. Poe. Senator McMillan, Michigan, has introduced a bill appropriating $20,000 to re-imburse the Association for maintaining lights in the Detroit river for the past nine years.

THE Board of Supervising Inspectors of Steamboats seems to make the Secretary of the Treasury say or endorse anything they wish to, but, this year they have fooled the technical journals also, but not the RECORD, the language being too dense for us to handle intelligently. The revised rule for steamers approaching each other in an oblique direction, so as to involve a risk of collision, applicable for the Atlantic and Pacific coast inland waters, became inadvertently mixed in transcribing and the word port was used instead of starboard, of course this oversight makes no difference, only that it had the authority of an act of Congress when the Acting Secretary of the Treasury put his "John Hancock" to it. However, he just as easily signed the opposite after the former "bull" had been pointed out to him, and now the marine journals can give the same publicity to the correction that they so cheerfully gave to the original erroneous rule, and this, too, so as not to mislead their readers. In another column of this issue we print the amendment under the caption of "Treasury Decisions." It behooves us to say at this time, that where a vessel must keep clear of another, she ought not to be told to port or starboard, as is done in these rules. In some instances it might be found necessary to slow down, stop, and perhaps reverse, there is no occasion for a fusilade of whistling, the vessel having the right of way, maintains her course and speed, the giving way vessel keeps clear. Why, therefore, should the Board of Supervising Inspectors of Steamboats destroy the free agency of the person in charge of the giving way vessel by making him either port or starboard? Blasts of whistles do not vary the duties and obligations of the respective vessels any more than nonsensical diagrams can point out the best action to take in all cases.

A PROMINENT Chicago lumber dealer writes the RECORD this week as follows:

"I desire to state that the condition of our river at the present time is in such a dangerous condition that it is hard to navigate and very derogatory to the commerce of Chicago. I want to know if the MARINE RECORD cannot arrange so as to help us in obtaining some immediate and permanent relief. Not one of the drainage commissioners that have taken charge of the river has ever had any marine experience, and do not seem to comprehend, realize or appreciate the marine interests of this section of the country. I think if the RECORD would more closely investigate the situation, the conditions would be found warranted in striving with might and main to have something done towards relieving us of the present pall on river traffic."

Our correspondent is perfectly right in his views regarding Chicago waterborne traffic, and it is absolutely necessary that some radical steps should be taken before the early opening of navigation. The Secretary of War, through his district officer stationed at Chicago, has jurisdiction over the navigable portions of Chicago creek, and not the Drainage Commissioners as our correspondent assumes. Prior to the opening of the canal, the RECORD pointed out the probable consequences to general navigation on lake and river and insisted upon proper remedial measures being taken to offset the palpable results. Mainly through the representations of Mr. Frank J. Firth, late president of the Lake Carriers' Association, and the publicity given to the subject in these columns, the House Committee on Rivers and Harbors has just concluded a hearing on this matter, and we look for immediate and adequate measures to be taken by that body before the present session of Congress adjourns.

PERHAPS, if the bottom, at the entrance of the "Soo" power canal, was a few feet higher than the mean level of the bottom surface at the Sault Ste. Marie Falls, there would be a better chance to rob the Falls without draining any extra supply from Lake Superior. Let it be remembered that the deeper the boring, the greater the head of water there will be to force a waste. The lake should be left to regulate the canal flow, instead of the canal, or any other artificial watercourse, ruling the level of the lake. There is an axiom about the tail wagging the dog, but the natural way is the other way, so with artificial channels as compared with natural waterways.

THAT bulk cargoes, such as iron ore, grain, coal and timber or lumber will reach a coast port in the near future directly from a lake loading port, is a foregone conclusion. The Montreal Harbor Commissioners now offer that port as the most favorable point of transfer for lake cargoes, instead of Quebec. The question lies entirely within the locality that offers an economical junction for lake and canal reshipment into ocean bottoms, and from a commercial standpoint, such a line of demarcation can be very strictly drawn.

APPROPRIATIONS for river and harbor work, that is, for the improvement and conservancy of navigable localities, has never been more closely scanned and considered than they have been during the last and this session of Congress. Hon. T. E. Burton, chairman of the River and Harbor Committee, has so devoted himself to the duties of his office, that, it is questionable, if there is another man in Congress better fitted to pass upon the merits or demerits of a sought for appropriation than the present chairman of this important committee. In this connection, however, there is an erroneous, but growing feeling extant, elsewhere, as well as at the lake lapped shores of certain localities, that it is only necessary to call the attention of the district engineer officer of the Corps of Engineers, U. S. A., to the fact, that, as some local improvements are in course of contemplation, it is essential for the welfare of the community, as well as the bounden duty of that officer, to recommend in his annual report that a sum of money be apportioned by the Federal Government to enhance the surroundings and business policy of the "Podunk Park Protection Society." Fortunately, for the country's exchequer, the United States officers of the Corps of Engineers, U. S. Army, are not usually of the calibre to be even slightly influenced by personal, syndicate, municipal or State representations, where they in any manner conflict with the strict line of duties laid down for the guidance of those officials. Furthermore, the assent or endorsement of the River and Harbor Committee and the final consideration of Congress relative to these appropriations, throws a safeguard around what would otherwise be an unnecessary frittering away and consequent expenditure of the people's money. In a word, a national expenditure should benefit the nation at large and not alone the owners of riparian rights on "Way Back Creek." Uncle Sam is mighty paternal in his condescensions, but, it is hardly equitable to tax one section of the country for the sole benefit of a minor and remote locality, or, perhaps, an individual, or even a clique of citizens.

REPRESENTATIVE SHELDEN has introduced a bill authorizing the Lake Superior Power Canal Co. to construct a canal at Sault Ste. Marie. It is drawn up so as to give the company authority to finish the canal, but provides that such remedial works shall be provided at the Lake Superior entrance as shall not reduce the water level below the mean datum, as fixed by the engineer department. It also provides that the level of water in St. Mary's river shall not be lowered and that if the engineer officers discover that this is being done, they are empowered to take possession of the headgates and other works and cut off the water from the canal. The engineer officers are to have access to the canal at all times, and all plans are to be submitted to the Secretary of War for approval. This is in accordance with the views expressed by Harvey D. Goulder, Esq., counsel for the Lake Carriers' Association at the recent hearing before the River and Harbor Committee in Washington.

THE steamer Amazonas got athwart the current and blocked Chicago river from Friday to Saturday last. The small steamer Jesse Spalding underwent a similar adventure just a week earlier. These experiences in the winter months, when little or no commerce is moving in the river, offers a horrible outlook for traffic during the summer months. The municipality, drainage trustees and tug boat companies will no doubt repudiate any responsibilty for the detention of vessels, straining of hulls, parting hawsers and the host of inconveniences which is sure to result from turning the Chicago river into a comparative mill race. Should the port be pronounced an unsafe one through competent authority declaring it unnavigable in its present condition, the owners of floating property and other affected interests must have recourse somewhere.

AN ex-minister of public works of the Dominion of Canada, now advocates "the regulation of lake levels by the erection of obstructions at the mouth of each lake to secure the economic operation of the canal system." Mr. Haggerty the ex-minister referred to, is evidently away off the question, why not regulate the outflow of canals by the erection of obstructions and leave the lakes clear for general navigation? Just as sure as the Chicago drainage canal is opened, so sure will the continued tapping of the lakes reduce the surface levels. It is high time that the Secretary of War took this matter up in all earnestness, and, if necessary, appoint eighteen committees, each of which may tell us over again what the veriest dullard already comprehends—viz., that the lake supply is limited.

FOR the first time in the history of the lakes we are this week favored with an ice report, published by authority of the Secretary of Agriculture, by the Chief of the Weather Bureau, as collaborated by the Department's local forecast official and marine agent stationed at Detroit. These direct and special reports are of inestimable value and benefit to the lake marine and cognate interests. With the ice conditions being closely watched and changes duly heralded at and from the several important points on the chain of lakes up to the free opening of navigation, the Weather Bureau will have gained another tribute to add to its already well earned service laurels. There is a shipshape comprehensiveness of actual conditions and requirements evinced in this departure of issuing special ice reports, that marks the present Chief of the U. S. Weather Bureau as being just about exactly the right man in the right place, and we can but ask that the ice conditions towards the close of navigation be as clearly and promptly heralded as is now being done for the opening of lake commerce.

THERE are civil engineering authorities who talk lightly of reducing lake surface levels by two-tenths, four-tenths and even six-tenths of a foot, any surprise expressed at the impudence of individuals tampering with international territorial rights, is met with the somewhat palliating if satirical reply, that it may take two, four or even six years to bring about the maximum results. Well! there are lots of us that wont live more than six years, at the same time Congress ought not to let us take the bread out of the mouths of our descendants before they have had a chance to appear on the scene.

PRECIPITATION alone rules the level of the lakes, the United States Government authorizes the Secretary of War, through the Chief Engineers, to protect from violation and conserve those territorial waterways for the best interests of state and national commerce. It is, therefore, clearly to be seen where the line of duty and plan of action rests when one tittle or iota of such rights are being invaded. The international aspect of the case presents a problem carrying with it a slightly different ruling.

THE "SOO" POWER CANAL.

On the general question of the effect the "Soo" power canal will have on the navigable possibilities of the St. Mary's river, opinions differ very widely. Colonel Lydecker, Corps of Engineers, U. S. A., seems to think that the levels of St. Mary's river will be lowered at least a couple of inches. Mr. Wisner, who is a member of the deep waterways commission, thinks with Mr. Frank H. Clergue, the vice-president and general manager of the Power Canal Co., that there will not be the slightest change in the depth of the water in the river owing to the opening of the canal. The River and Harbor Committee is now considering these two different views of the question, and it is more than possible that an investigation under the government may be made into the possibilities in the case before Congress will take any very decided action. Those who favor the power project show in substantiation of their position that this is a canal between lakes, and not a channel conveying water out of the lakes entirely to some stream which does not now connect with them. In this respect the "Soo" canal and the Chicago drainage canal differ widely.

STEAMBOAT OFFICERS APPOINTED FOR THE SEASON OF 1900.

List furnished the RECORD by owners and managers.

W. S. BRAINARD, Toledo, O.—Str. Cherokee, Capt. J. A. Ward; Eng. Ed. Toubart. Mohegan, Capt. Wm. Hagan; Eng. J. Reagan. Schr. Chippewa, Capt. John Davidson. Mingoe, Capt. A. Snelgnote.

BROWN & CO., Buffalo.—Str. Samoa, Capt. John Isbister; Eng. Jos. Valley. Sam'l Marshall, Capt. August Jean; Eng. Jno. Sheehan. Thos. Cranage, Capt. Jno. S. McNeil; Eng. Jos. Blanchard. City of Paris, Capt. E. D. Ballentine; Eng. Wm. McDougal. City of Venice, Capt. Chas. Ainsworth; Eng. J. A. McDougal. Bge. Sam'l J. Tilden, Capt. Jno. Burke.

GOODRICH TRANS. CO., Chicago.—Str. Columbus, Capt. Robt. Smith; Eng. Geo. McLaughlin. Virginia, Capt. H. E. Stines; Eng. G. P. Roth. Indiana, Capt. A. Gallagher; Eng. R. Flint. City of Racine, Capt. J. Wilson; Eng. W. R. Patterson. Iowa, Capt. J. Raleigh; Eng. J. Buschman. Atlanta, Capt. Jos. Munger; Eng. W. J. Downing. Georgia, Capt. E. Carus; Eng. A. J. Smith. Sheboygan, Capt. C. T. Bronson; Eng. F. Neidert. Chicago, Capt. Berlin Sniffin, Eng. T. Dorrey. Tug Arctic, Capt. C. R. Thayer; Eng. G. Germanson.

TONNAGE.

WEEMS, VA., Feb. 26, 1900.

To the Editor of The Marine Record:

Let me know through your columns the best and simplest way or rule to measure a boat to ascertain her tonnage, and how much off for net, and why do they deduct for net tonnage when a boat always carries more than her gross.

EVAN OWEN.

Multiply the length between the perpendiculars by the external breadth, this again by the depth of hold, then multiply by one of the following decimals: For yachts under 60 tons, .5; if over, .45. For full built craft, .7; medium, .66; if sharp, .62. High speed steamer, .58. Then divide by .94, or near enough 100. This will give the approximate tonnage under deck. The mathematical formula may be given thus:

$$\frac{L \times B \times D}{100} \times \frac{6}{10}$$

for gross tonnage. The foregoing is not the Custom House method, but is more from a practical standpoint, as also is this rule for yacht measurement, measure from the fore part of the stem to the after part of the sternpost. From the length deduct the extreme breadth, the remainder is this length for tonnage. Then multiply the tonnage length by the breadth, and the prodnct by half the extreme breadth and divide the result by .94, the quotient will be the tonnage. The register tonnage of every vessel is her entire internal cubic capacity in tons of 100 cubic feet each. The gross tonnage of a steamer is her total measurement under deck (including engine room, etc.), and of erections on deck; the net register tonnage is the gross register less engine-room space and other minor spaces allowed by the law; the under-deck tonnage is the total tonnage under deck including engine room and all other spaces that are under deck. In the case of sailing ships there is a comparatively small difference between the gross and net register, seeing that there is no large deduction for engine room space, the deduction, such as it is, being only for crew space, fixed water tanks, chain lockers, etc. To ascertain approximately the dead weight in tons a ship can carry safely, multiply the tonnage under deck by 1.5, add 10 per cent. for smooth water trips. In measurement, cargo at 40 cubic feet to the ton, multiply the register tons by 1.9, the product will be the approximate dead weight required.—ED.

MARINE INSURANCE PROFITS.

We have perused with the greatest pleasure the figures contained in the annual statement of the Atlantic Mutual Insurance Co. They prove conclusively that, due to an able management, the company has carried on a successful business during 1899 in spite of low rates and large maritime losses, which brought some marine underwriters to the verge of bankruptcy. Total marine premiums, including premiums on unexpired policies on January 1, 1899, $4,133,975.63. Premiums marked off as paid, $3,305,179.38. Net losses, $2,276,689.96. Return premiums and expenses, $484,296.77 The company will pay 6 per cent. interest on oustanding certificates of profit, redeemed the certificates of 1894 and has declared a dividend of forty per cent. on the net earned premiums of the company for 1899. The officers are: A. A. Raven, president; F. A. Parsons, vice-president; Cornelius Eldert, 2d vice-president; Theodore P. Johnson, 3rd vice-president, and J. H. Chapman, secretary. We add to this statement an interview with Mr. Raven, published in the New York Herald, which will interest our readers:

"Several of the companies," said Mr. Raven, "were almost made bankupt in efforts to make good their losses. I am heartily in favor of a general advance over present rates. In fact, something will have to be done in that direction.

"No, decisive action has yet been taken by the American companies. The English companies operate on a different basis, and I should not be surprised to hear that they have agreed upon a uniform advance."

American and English marine underwriters will not soon forget the seasons of 1898 and 1899. The insurance losses were appalling in the period from November, 1898, to May, 1899.

"During that time," said Mr. Raven, "the catastrophes at sea must have involved claims amounting to about $6,000,000 from the different insurance companies."

In connection with the low rates for marine premiums that have prevailed for some time, it has been a mystery to us, that the British marine underwriters have practically charged the same rate for insurance on old vessels as for instance of the Allan, State and Anchor Lines, as on the newest and fastest vessels of other lines. We have for a long time been unable to explain this anomaly until recently; we have received information from a very competent source that this was due to the fact that most of the owners of steamships of the regular lines were also directors in British Marine Insurance Companies who thus violate the position of trust they occupy in the latter in order to attract business to their vessels. A state of affairs which should end—the sooner the better.—The New York Maritime Register.

William J. Riordan had his left leg broken at Tonawanda six months ago and had to give up his position as chief engineer of the steamer Veronica for the season. Last Saturday he slipped and fell in Milwaukee, and fractured the same leg. He may be laid up for another six months.

PORT HURON

Special Correspondence to the Marine Record.

Capt. W. E. Rice, of Harbor Beach, is spending a few days in the city.

Extensive improvements are being made to the White Star and Anna P. Grover in Black river.

The barge Eva S. Robinson, lying in Black river near Seventh street bridge, is receiving numerous repairs.

On account of the inclemency of the weather work was suspended on the two steel boats at the Jenks Ship Building yards on Tuesday.

E. M. Carrington: "The first boat the late Capt. A. A Cox sailed belonged to me. The last one he sailed was the tug Carrington."

Capt. John McArthur, who has been superintending repairs of several boats in Buffalo, has returned to Port Huron. He will sail during the coming season the steamer Bulgaria.

The steamer Sterling, which Capt. Burnham will place on the river route, will make a neat little passenger and excursion boat. A new electrical plant will be put in and the boat will be lighted so it can be used for excursion and moonlight parties.

The supervising inspectors recently sent out to all of the branch offices on the lakes blanks and instructions for vesselmen. It has been discovered that in the new code of signals adopted by the inspectors that no signal for checking a vessel is given. Under this condition of affairs a vessel would at all times be compelled to run at full speed, or else the captain and engineer on each boat must arrange signals to suit themselves. The supervising inspectors learning of the blunder they have made have requested that all of the blanks sent out be returned and will soon issue new ones.

In conversation with Mr. Ed. J. Kendall this week he said: "You can say for me that I am in favor of building a new jack-knife bridge over Black river, where Military street bridge now is. I, as one of the bridge committee, on Monday inspected the bridge for the new boat which is being built by the Jenks Ship Building Co. The draw is several feet too narrow and will necessitate numerous changes. The piers are also in need of repair and will cost quite a sum of money. With a jack-knife bridge, that is one which shuts up like a knife, all difficulty would be done away with and there would be no need of any piers. The bridge could be built for a reasonable figure.

Point Edward, to all appearances, shows a bona fide move toward prosperity. For years the Ontario Lumber Co. has occupied the small piece of land south of the point with a lumber yard and a large number of vessels each year have discharged loads of lumber at the dock. Now comes the information that the company will construct a large saw mill in connection with the lumber yard. It is expected that work will be commenced on the buildings in the spring. The lumbering interests of the company are very extensive and with Sarnia bay in which to anchor logs it will have all the facilities needed. Immense rafts can be towed into the bay without any inconvenience.

At last all the Buffalo vessel agents are in the same building and very nice it is, especially for an out-of-town marine man to find them. And the direction is so easy, 200 Main street, the Exchange block. Somebody ought to get the owners to change the name to something that sounds more moist than that. Brown & Co. have been there a long time, and one after another the members of the same business have gathered in the block. John L. Crosthwaite came first; then last spring Drake & Maytham located there; then Hall & Root followed, and now John J. Boland, who appears to have captured most of the lumber chartering, is moving into the block. With the insurance concern of Smith, Davis & Co. and Smith & Wilcox also in the block, and the Red Star steamers, besides the Davidson office and Coxe Bros., the shippers of hard coal, the block is a howling marine center.

In the United States Court Judge Seaman is hearing the libel suit of Joshua Ritchie, a marine engineer of Port Washington, against F. A. Dennett, of Sheboygan, sole owner of the steamer R. A. Seymour, Jr., for damages amounting to $601.92, growing out of the alleged violation of a contract. The suit is of interest to seamen, as in establishing the contract Mr. Ritchie pleads a custom that he says is prevalent along the chain of lakes. He asserts that engineers are contracted for at a time prior to the opening of navigation for the entire season. He was employed by the captain of the barge, he says, and after he had performed work in getting the barge in condition for her first trip he was informed his services were not necessary. This was on April 13, and he says the season for employing first engineers was passed. For that reason he was unable to find employment as first engineer, but succeeded in getting work on a fishing tug, where he received a salary of $55 per month without board. As first engineer he would have received $70 per month, and his damages are computed as the difference between what he earned and what he would have earned as first engineer of the Seymour.

THE tug Duncan City has been bought by the Pankratz Lumber Co., for $6,000, she will be a valuable addition to the company's fleet. Her dimensions are: Length 104 feet, beam 18 feet, depth 9 feet and has a gross tonnage of 179 tons. She was built in Manitowoc in 1883.

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1513 Masonic Temple,
CHICAGO.

W. J. WILSON,
(Late Lieutenant U. S. Navy),
Principal.

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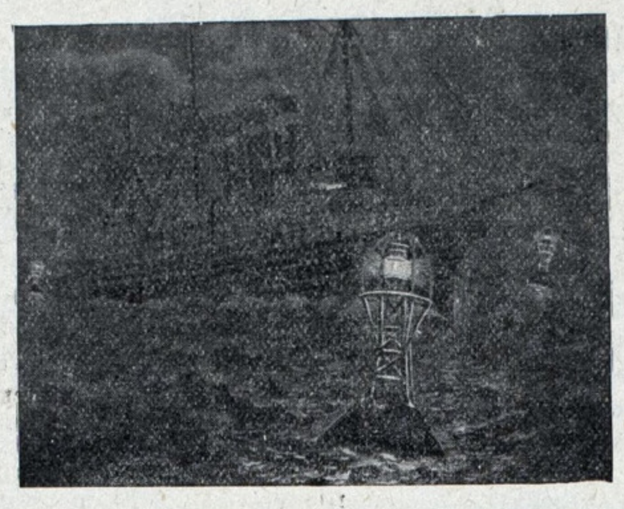

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TREASURY DECISIONS.

CORRECTING ERROR IN DEPARTMENT CIRCULAR NO. 12, RELATING TO RULE II, PILOT RULES FOR ATLANTIC AND PACIFIC COAST INLAND WATERS.

TREASURY DEPARTMENT,
STEAMBOAT-INSPECTION SERVICE,
WASHINGTON, D. C., February 19, 1900.

To masters and pilots of steam vessels and others whom it may concern:

You are informed that, in transcribing the amendment to Rule II, Pilot Rules for Atlantic and Pacific coast inland waters, as published in *italics* in Department Circular No. 12, dated February 7, 1900, page 7, and in Treasury Decisions dated February 15, 1900, page 10, the words "*so as to cross the stern of the other steamer*" were inadvertently placed after the word "port," whereas they should have followed the word "starboard" where that word occurs in the fifth line of said Rule II in Department Circular No. 12, and in the seventh line of Rule II of the Pilot Rules in Treasury Decisions heretofore referred to.

Following is the rule as it was intended by the Board of Supervising Inspectors to read, and it will be so printed in the new edition of the Pilot Rules:

PILOT RULES FOR ATLANTIC AND PACIFIC COAST INLAND WATERS.

Rule II. When steamers are approaching each other in an oblique direction, as shown in the diagrams of the fourth and fifth situations, so as to involve risk of collision, the vessel which has the other on her own starboard side shall keep out of the way of the other, which latter vessel shall keep her course and speed; the steam vessel having the other on her starboard side indicating by one blast of her whistle her intention to direct her course to starboard, so as to cross the stern of the other steamer; and two blasts, her intention of directing her course to port, which signals must be promptly answered by the steamer having the right of way, but the giving and answering signals by a vessel required to keep her course shall not vary the duties and obligations of the respective vessels.

JAS. A. DUMONT, Supervising Inspector-General.
Approved Feb. 19, 1900, O. L. Spaulding, Acting Secretary.

SEA STORES.

No authority of law for exemption of excessive sea stores from assessment of duty.

TREASURY DEPARTMENT, February 15, 1900.

SIR: I have the honor to acknowledge receipt of your letter of October 7, 1899, inclosing copy of a dispatch from the consul of the United States at Kingston, Canada, in relation to the complaint of the president of the Thousand Isles Steamboat Company of the action of the United States customs officers in exacting duty on sea stores upon the arrival of vessels of his company at American ports.

The consul states that it is impossible to estimate "the exact amount of stores that will be needed for the coming day or two;" that he finds the practice of the Canadian authorities, with a law similar to that in force in the United States, is to pay no attention to sea stores as long as they remain on board, until the end of the season, when all foreign supplies found are assessed with duty or bonded, which amounts practically to a waiver of duty; and that for the purpose of keeping as much as possible of the rich business of the Thousand Islands under the American flag he "hopes the Secretary of the Treasury will find some method of treating the sea stores with the same liberality as they are treated by the Canadian minister of customs."

It appears that the headquarters of the Thousand Isles Steamboat Company is at Kingston, Ontario; that the vessels of said company are not registered, but enrolled and licensed under the laws of the United States; that said vessels are engaged principally in carrying excursionists to and from Canadian ports and the Thousand Islands; that two-thirds of the trip, namely, 24 miles, is in foreign waters, and the other one-third, namely, 12 miles, is coastwise, between Clayton and Alexandria Bay, New York; that upon the return of the vessels to the United States the company is required to pay duty on excessive sea stores purchased in Canada, and that said company desires to be relieved from the payment of the duty on such stores, on the ground that it is impossible to foretell the number of passengers to be provided for on a given trip, and consequently to make a proper estimate of the quantity of sea stores.

The special Treasury agent stationed at Ogdensburg, N. Y., has carefully investigated the matter, and reports that the company seeking relief could victual its boats in the United States, purchasing supplies at Clayton, N. Y., or from New York City, and thus avoid paying duty on Canadian goods, and that said company wishes to buy its supplies in Canada, because food is cheaper there.

Section 3111, Revised Statutes, provides that if any vessel enrolled or licensed to engage in foreign or coastwise trade on the northern, northeastern, and northwestern frontiers of the United States shall touch at any port in the adjacent British provinces, and the master of such vessel shall purchase any merchandise for the use of the vessel, he shall report the same with cost and quantity thereof to the collector or other officer of the customs at the first port in the United States at which he shall next arrive, designating them as "sea stores;" and in the oath to be taken by such master of such vessel on making such report, he shall declare that the articles so specified or designated "sea stores," are truly intended for the use exclusively of the vessel, and are not intended for sale, transfer, or private use. If any other or greater quantity of dutiable articles shall be found on board such vessel than are specified in such report or entry of such articles, or any part thereof shall be landed without a permit from a collector or other officer of the customs, such articles, together with the vessel, apparel, tackel, and furniture, shall be forfeited.

Section 3112, Revised Statutes, provides that if, upon examination and inspection by the collector or other officer of the customs, such articles are not deemed excessive in quantity for the use of the vessel until an American port may be reached by such vessel, where such sea stores can be obtained, such articles shall be declared free of duty; but if it shall be found that the quantity or quantities of such articles, or any part thereof, so reported, are excessive, it shall be lawful for the collectors, or other officer of the customs, to estimate the amount of duty on such excess, which shall be forthwith paid by the master of the vessel, on penalty of paying a sum of not less than $100, nor more than four times the value of such excess, or such master shall be punishable by imprisonment for not less than three months and not more than three years.

The laws of the United States contain no provision for the warehousing of surplus sea stores of vessels while in port, so that they may be reshipped for future use of the vessel without the payment of duty (T. D. 7697 and 18351); nor can surplus sea stores be sealed up on board until the vessel sails to avoid duty (T. D. 4438).

From the foregoing it will be observed that masters of the vessels engaged in foreign and coasting trade, and touching at adjacent British ports and purchasing merchandise for the use of their vessels, are required to report the same, with cost and quantity thereof, to the officer of the customs at the first port in the United States at which they shall next arrive, designating them as "sea stores," and shall declare that the articles so designated are truly intended for the use, exclusively, of the vessel, and are not intended for sale, transfer, or private use; and if the collector or other officer of the customs find such stores excesssive, duty shall be levied on such excess, which duty the master must pay or be subjected to a penalty.

After a careful consideration of the subject, I have reached the conclusion that there is no authority of law for the exemption from duty of the excessive sea stores purchased in Canada by the Thousand Isles Steamboat Company and found on their vessels upon their arrival in the United States.

In this connection, I will state that excessive sea stores are not to be regarded as included in the requirements relating to the importation of "goods, wares and merchandise," and the statement of the master of the vessel can be accepted in lieu of invoice for the purposes of assessment of duty. (Article 167, Customs Regulations, 1892, and T. D. 16458.)

Respectfully,
O. L. SPAULDING,
THE SECRETARY OF STATE. Acting Secretary.

FRENCH CANADIAN DIALECT "POME."

We have been asked for a copy of a French Canadian dialect effusion that appeared in the RECORD some years ago. A glance through our files brings out the following.

DE "LOOK AN SEE."

A skow kom sailing down Lak St. Claire
Shingal an cord hood her deck load ware;
De win blew fresh an de win blew free,
An speed her way dat "Look an See;"
Out she sail from de creek of de Bear,
Over de waters of Lak San Claire.

De win increase till he blow a gale,
De "Look an See" she reef her sail;
De water joomp rite o'er de boat
An way tree stick of cord hood flote;
From gail to hurricain blow de wind,
Four bonch of shingal flote behind.

De captain she can't stan dat no more,
All de profit gone from dat trip sure;
If all shingal an de cord hood go; de sheriff he seeze,
An sell dat skow, den no more whiskey,
No more bread, no more cabin to cover de head.

So de mate she yell in de gail,
Batise stan by an let go dat sail;
Haul in de peek halyard when I luff de boat,
De peek haul in de halyard gon,
An under de gib day scoot along.

Dey reach de river, dey pass de lite,
Dare stopping place soon com in site;
De captain jomp rite roun and roun;
Parblue Batise, why doan you haul down?
Can't do it captain, de mate reply,
If you tink you can, you bess com try.

Trow in de hank so quick you can,
De captain cry as he forward ran;
Trow in de hank, an we make tings snug,
Better do bat dan hire a tug;
But captain, de hank ain't got no string on,
Never mind, trow her in, may stop her som.

—Author Unknown.

YON YONSON'S YUMP.

Yon Yonson vas good sailor-man
Upon te vood-scow "Kate;"
He cum har over yars ago,
Hees fortune he to mak.
He vas good fellow on te scow,
An fame soon cum to Yon,
Ven he " yumped into te yallie-boat,
Vith hees yellie yacket on."

Now Yon of det he never tank,
Det yump he mak befor,
Bot Ole see hem an' he tell
Det story on te shore.
Te fellows laugh an always say
Ven Ole dey vould con,
"Yon Yonson yumped to te yallie-boat
Vith hees yellie yacket on."

Yon saved hees money yar by yar,
Vith it he buy scow too;
He sail har good vith man an boy,
Te three mak up har crew.
He mak fas trip across te lak,
All veather he vould run,
And he "yumped into te yallie-boat
Vith hees yellie yacket on."

Now Yon hees reech, no more he sail,
Life easy he can tak,
Hees name and fame it has spread far,
It covers all te lak;
Det day fame smiled upon hees life
Ven he climbed to yibboon upon,
"An yumped into te yallie-boat,
Vith hees yellie yacket on."

Manitowoc, Wis. —EDWARD L. KELLEY.

U. S. WEATHER BUREAU ICE REPORT OF THE LAKES.

The severe cold weather of the past few days has increased the thickness of ice in all the lakes except Ontario where but little ice is reported. On Superior the ice fields at the west end extend out to near the Islands, with large moving fields from Keweenaw Point eastward to Whitefish Point. Whitefish Bay is full of ice and it extends out into the lake for eight or ten miles. At the Soo the conditions have not changed materially during the week. On Green Bay the ice remains solid and has increased in thickness and ranges from 15 to 24 inches thick. The harbors on the west shore of Lake Michigan are practically free of ice under the influence of westerly winds, while there is considerable pack ice along the east shore; a large number of ice fields are reported in the lake. The ice at the Straits is reported 20 inches thick and has become very firm under the cold weather. There is not so much ice reported in Lake Huron; Thunder Bay is about clear; there are some large fields of ice in the lake which extend southward to the mouth. The Detroit river is again filled with ice and the ferries have some difficulty in making passages. Lake Erie is reported nearly frozen over with ice from six to ten inches thick; at the east end there is a large amount of pack ice and no water is visible. The harbors on Lake Ontario are closed but very little ice is reported in the lake except at west end. The details follow:

LAKE SUPERIOR.

Duluth—Lake ice-field extends beyond horizon and averages 13 inches near Duluth.

Bayfield—Ice 30 inches thick; no change.

Washburn—Ice 14 inches thick; conditions remained unchanged.

Ashland—Ice in bay 26 inches.

Eagle Harbor—Ice 16 inches in harbor. Large fields outside, quite solid.

Pequaming—Bay frozen solid as far as can be seen.

Marquette—Ice 10 inches in harbor and solid. Large ice-field moving east.

Grand Marais—Ice in harbor 12 inches.

Whitefish Point—Whitefish Bay full of ice and it extends into the lake 8 or 10 miles.

Sault Ste. Marie—No change in ice during week.

LAKE MICHIGAN.

Manistique—No ice in harbor.

Escanaba—Ice 24 inches; still very solid.

Menominee—Ice firm, ranging from 13 to 15 inches.

Sturgeon Bay—Ice about 20 inches.

Green Bay—Ice 11.5 inches; no change during the week.

Sheboygan—No ice in harbor.

Milwaukee—Ice in harbor 3 inches; bay frozen over inside breakwater; tugs breaking the ice.

Racine—No ice in harbor. Northwest winds moving ice off shore.

Chicago—Ice broken in Chicago river and harbor; lake clear along shore but heavy drift ice several miles out. Navigation not impeded; westerly winds keep harbor practically free.

Michigan City—Ice at mouth of harbor in shifting ice-fields; ice not heavy.

St. Joseph—Ice in harbor 8 to 10 inches.

Saugatuck—Ice-fields have increased considerably during week, with pack ice 30 feet high on shore; no water visible.

Holland—Large fields of ice have drifted in against the shore; ice in Black Lake 12 inches.

Grand Haven—Heavy pack ice along immediate shore line has completely blocked harbor during past two days.

Glen Haven—Ice extends about one mile from shore; about 4 inches thick.

Mackinaw—Ice 20 inches thick and solid in the Straits.

LAKE HURON.

Mackinac Island—No ice to eastward of island; between here and Mackinaw City ice from 14 to 20 inches. No snow on it.

Cheboygan—Harbor ice 4 inches thick.

Alpena—The ice is practically all out of Thunder Bay; large fields of drifting ice around Middle Island.

Oscoda—Ice 12 inches thick.

Bay City—Ice in river 13 inches thick.

LAKE ERIE.

Toledo—Ice six inches thick.

Sandusky—Ice 8-5 inches thick in the bay.

Put-in-Bay—Ice 12 inches thick; ice running in north passage.

Huron—The lake is covered with ice as far as can be seen, but it is not over two inches thick.

Cleveland—Ice covers lake as far as eye can reach; in the harbor it is five inches thick.

Erie—Ice had practically disappeared until Saturday, when the cold wave made from 6 to 7 inches in the harbor.

Buffalo—Ice in harbor 10 inches and solid; it is much piled up outside the breakwater; there is no open water in sight.

LAKE ONTARIO.

Fort Niagara—River jammed full of ice from Lewiston to Youngstown. Lake full of running ice.

Charlotte—Occasional drifting fields come in with northerly winds.

North Fair Haven—Ice in harbor 10 inches; small opening in northwest corner of bay; no ice visible in the lake.

Sodus Point—Ice in harbor 8 inches; no ice in lake.

Oswego—Small amount of ice at mouth of harbor.

NORMAN B. CONGER.

Detroit, Feb. 27.

PUZZLING THE LAWYERS.

The ordinary customs, also the common phraseology used on board ship must frequently puzzle those lawyers who don't have even a smattering of the vernacular.

An inquiry into the cause of a steamer foundering in the Atlantic has just been heard at Manchester, England, when the lawyers got after the "wood spoiler" as follows:

"Samuel Langshaw, the ship's carpenter, said he sounded the holds twice daily. * * * That was witness's first voyage in the vessel, but he had been 26 years a ship's carpenter. Asked whether the ship rolled much, witness said it was a wonder she did not roll in the dry dock.

"Did you consider that she was much given to rolling?—Yes, sir, very much.

"How much would she roll at a time?—She rolled so much that she rolled me out of my bunk, and me and my tool chest were on the floor together.

"Was the weather bad on the 9th?—Yes, very bad; she made it bad, anyway.

"How about the list?—She had a tidy list to starboard.

"What depth of water was there in the engine-room?—I can't say how deep it was, but it was up to the cylinder tops. The water in the stoke-room washed things about and made a noise like a shipbuilding yard.

"Was she a well-found, seaworthy ship, in your opinion? Yes, she was fit to go anywhere that she could get.

"Who told you to leave the ship?—The storekeeper. He called me and said: 'Come on, 'Chips;' get up; we can do no more; she's going down.'

"Why did they call you 'Chips?'—Because I make a mess of things.

"You use the expression, 'She made the weather bad.' What do you mean by that?—She rolled so much.

"But the vessel did not make the weather bad?—No, but she made bad weather of it."

The 2nd officer's examination and evidence resulted in his telling all that he was asked in the briefest and best possible way for a junior officer to act when on the witness stand:

"Witness was pressed as to a statemant he had heard from one of the engineers' staff that the water was gaining on the vessel each day out. He admitted having been told so, but added that he was told that the water could be kept under. He did not exactly 'report' the matter to his superior officers because he considered they all knew about it, but they talked over it occasionally. The water was trickling slowly through the starboard bunker door. The pumps were at work.

"Did you go to bed feeling easy in your mind?—Well, I didn't see what more could be done; the steam pumps were going, and there were no hand pumps.

"Did you do nothing else when the water was gaining like that; suggest nothing, but go to bed?—It seems an extraordinary state of affairs—I did not go to bed; it was my watch on deck.

"Would it have been possible by any amount of baling and towing to save the ship?—No.

"And had you been the captain would you have abandoned her?—Yes.

"To what do you attribute the casualty?—To ten days of excessive straining and the ship starting something.

"What was the most the vessel rolled at sea?—Forty-five degrees both ways.

"Well, then, she was labouring! Had she ever rolled like that before?—No.

"Have you ever seen a vessel roll 45 degrees both ways before?—Well, I have seen some give a lurch, but not 45 degrees.

"I believe a good many vessels had to put back in the same gale as the Manchester Enterprise went down in?—Yes.

Counsel is rather curious to know why you did not go about asking questions as to this, that and the other. I suppose you attend to your business?—That is it.

"You have been in the vessel six voyages. Was she in your opinion, perfectly seaworthy?—Yes.

"You say the vessel rolled 45 degrees. How could you tell?—The clinometer showed it—both ways.

"What would be the cause of such excessive rolling?—The cross seas that prevailed."

The witness was then excused, much in the same manner as "Chips" had been, but we venture to say that either the second mate or the carpenter, could have led the cross-examiner a lively chase along the lines of deck parlance and common every day ship usage, and that too, with very little provocation.

Fowler's Mechanical Engineer's Pocket Book for the year 1900 has just been issued by the American publishers. D. Van Nostrand Co., New York. The book covers a wide range of subjects, as its title would indicate. An apparent effort has been made to simplify the contents, as far as consistent with a pocket book presentation of the subject; and a feature of the work is the use of explanatory paragraphs throughout in which the present state of knowledge, or the commercial application of it in each case, is concisely stated. Besides the usual contribution of working formulæ and tables there is a table of properties of saturated steam over a a wide range of pressures, from 1 lb. to 300 lbs. absolute pressure. Chapters are devoted to steam boilers and engines, gas and oil engines, locomotives, machine tool work, hydraulics, textile machinery, building, construction, metallurgy, mining, etc. A very considerable amount of space is devoted to electricity, with special reference to electric traction, and there are small chapters on such subjects as chains, springs, acetylene and chemistry. A special chapter on the construction of steamships is written by James Wimshurst, formerly connected with the British Board of Trade. Considering the size of the book, about 500 pages, and the variety of subjects covered, it is well worth the investment of $1 as an addition to the stock of available data on the designer's shelf. The Burrows Bros.' Co., Cleveland.

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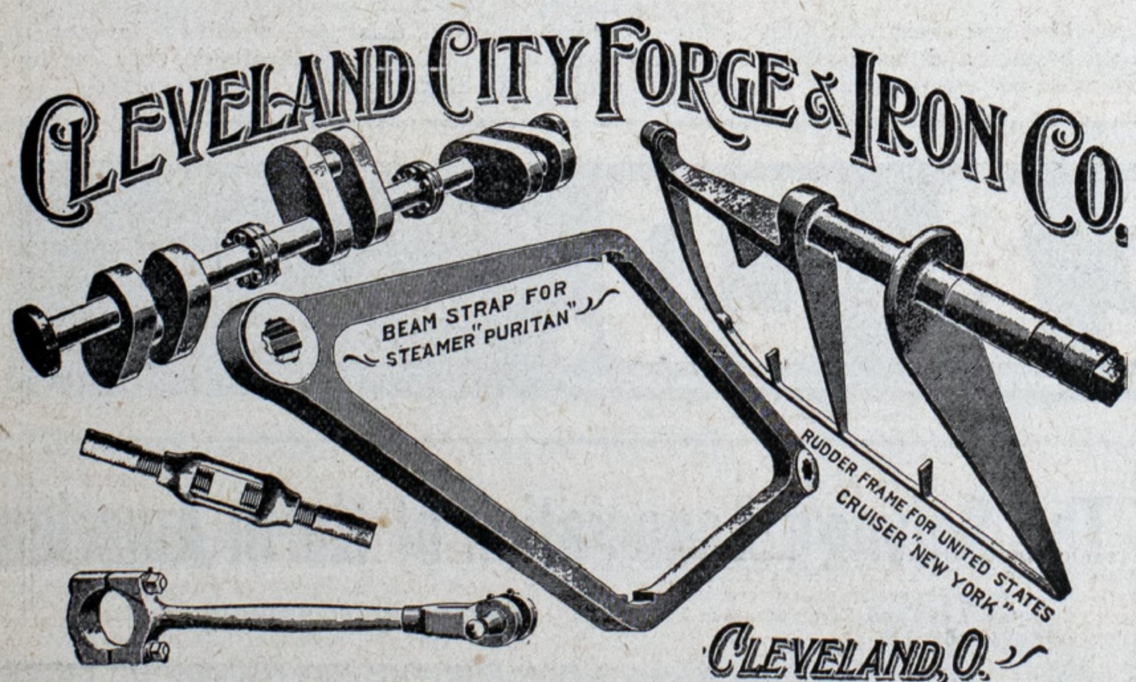

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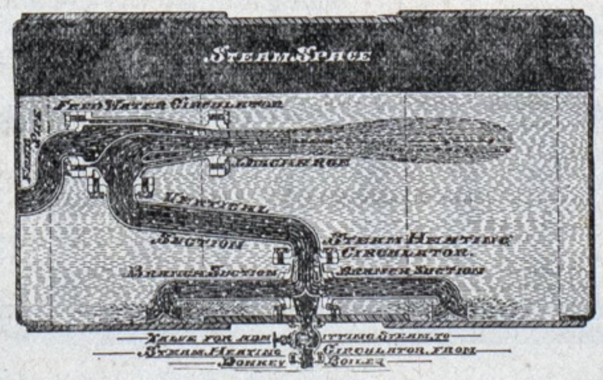

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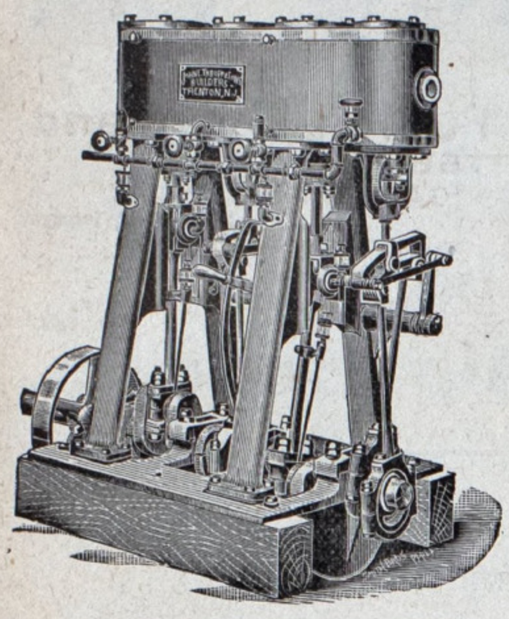

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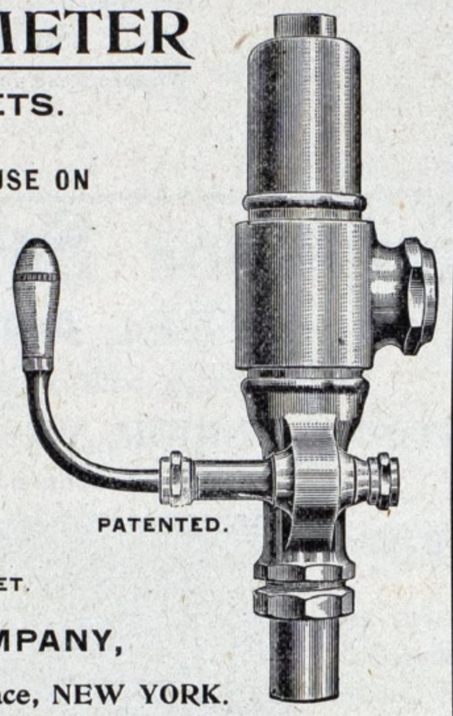

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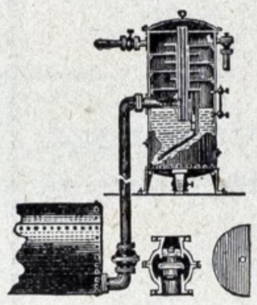

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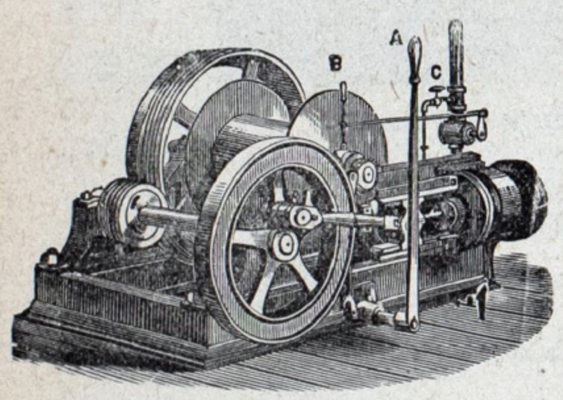

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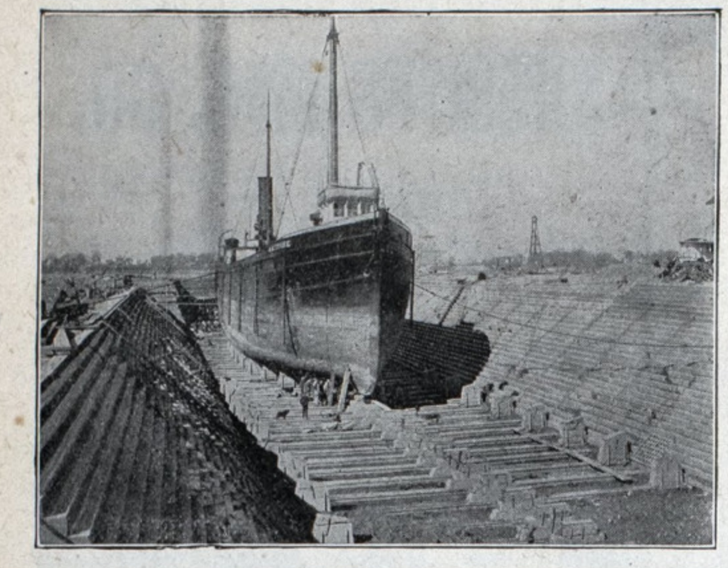

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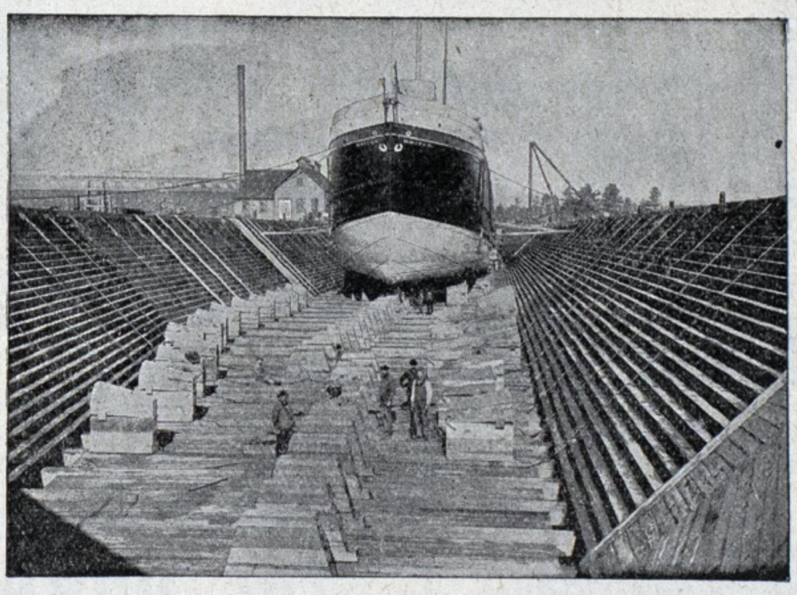

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